

## Article

# The Influencing Mechanism of the Communities' Built Environment on Residents' Subjective Well-Being: A Case Study of Beijing

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**Abstract:** There is a consensus toward quantitative environmental design in the information age, but the content and specific practices of its quantification have yet to be systematically studied. To enhance residents' subjective well-being through environmental design, this study includes 847 valid questionnaires across four types of communities and identifies different types of resident groups using correspondence analysis. Then, this study compares the differences in the built environment and subjective well-being using one-way ANOVA and analyzes their impact via regression analysis. The results indicate that residents in old communities have the highest subjective well-being (3.93/5) and built environment assessments, and residents in policy housing communities have the lowest subjective well-being (3.37/5) and built environment assessments. A resident's subjective well-being is more influenced by two types of built environment factors: architecture and landscape and the human–land relationship. Age, education level, public place usage, and the community's overall evaluation also significantly affect residents' subjective well-being. In the information age, quantitative design is the inevitable direction of future design. Through quantitative research, targeted design strategies can be proposed to serve community residents better in their communities and provide references for communities in other developing countries.

**Keywords:** built environment; subjective well-being; population differences; environmental design; quality of life



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## 1. Introduction

As global urbanization progresses, cities have significantly improved living standards, economic opportunities, and access to services. However, rapid expansion has also led to issues such as pollution, which pose a significant threat to residents' well-being. The rapid urbanization process, particularly in developing countries, has led to the severe deterioration of the built environment [1,2], which poses a significant challenge to improving residents' well-being [3,4]. Approximately one billion people live in communities that often lack essential services such as clean water, sanitation, and adequate housing, further exacerbating the residents' well-being crisis. Compounding these challenges [5], the COVID-19 pandemic has underscored the fragility of urban ecosystems [6]. Particularly, China has been experiencing rapid economic growth and urbanization since 2020, with urbanization surpassing 60% [7]. The densely populated and high-density built environments in large cities have posed significant challenges to the quality of life for residents. Within the global vision directed toward the Sustainable Development Goals (SDGs), enhancing people's well-being has emerged as one of the critical objectives pursued by countries worldwide.

According to the United Nations report, the enhancement of well-being reflects improvements in quality of life and is a vital indicator of social progress and development [7]. This calls for a comprehensive and multidimensional approach to analyze the built environment and enhance residents' well-being.

Well-being is the comprehensive judgment result of people's multidimensional quality of life [8,9]. Specifically, well-being can be measured from objective and subjective perspectives [10]. Researchers assess objective well-being based on indicators such as income, literacy rates, and life expectancy, along with subjective well-being, encompassing how individuals perceive and experience their well-being [10,11]. Although objective well-being is easily measurable and comparable [11], researchers have pointed out that socio-economic indicators struggle to reflect true happiness levels, especially as residents are heterogeneous and have different improvement needs [12–14]. To address the limitations of measuring objective well-being, researchers have increasingly turned to surveys or interviews to assess residents' life satisfaction or hedonic levels from a psychological perspective [12,15]. Life satisfaction refers to an individual's overall contentment with various aspects of their life, while hedonic levels are related to residents' negative and positive emotions [16]. Studies have found that self-reported subjective well-being data exhibit high internal consistency, reliability, and stability [17,18], capturing individuals' subjective assessments, which are difficult to capture using objective indicators. However, the psychological measures of subjective well-being often rely on personal experiences and fail to consider an individual's physical state [19]. Individual needs and responses vary in both physiological and psychological aspects [20]. Recent studies suggest that subjective well-being depends on reactions from both physiological and psychological perspectives [20,21]. Understanding the influence of physiological factors on subjective well-being can help design more effective health interventions. Physiological indicators, such as heart rate, blood pressure, immune function, and hormone levels, offer objective and quantifiable data that complement the psychological assessment of subjective well-being, leading to more reliable and comprehensive evaluation results [19,21]. However, limited studies assess subjective well-being from physiological and psychological perspectives in urban planning and design.

The environmental design of the built environment is an essential way to enhance residents' subjective well-being. Some researchers have explored the effect of a collective built environment on subjective well-being from one or more aspects [3]. For example, immersing people in scenery to temporarily escape mundane life can alleviate mental fatigue and enhance subjective well-being [22]. Moreover, a well-built environment can attract user participation, create positive activity experiences, and strengthen users' physiques [23–26]. Urban greening could also contribute to well-being by emitting substances that disinfect and inhibit bacteria, improving air quality and boosting residents' immunity [22]. Other studies have focused on the multiple aspects of built environments. For example, Pfeiffer and Cloutier (2016) outlined the key drivers of subjective well-being, including public spaces, natural spaces, social interactions, and safety [27]. Mouratidis (2018) provided a conceptual indicator framework in which the built environment influences subjective well-being through social relationships, leisure, health, and emotional experiences [28]. Shekhar et al. (2019) argue that subjective well-being is determined by four factors, including engagement, access, identity, and safety [29]. Dang et al. (2023) analyzed the relationship between the built environment and subjective well-being from the perspectives of personal, housing, and neighborhood factors [30]. Finally, the factors affecting residents' subjective well-being differ at various scales. According to previous studies, research has confirmed factors influencing subjective well-being at different scales, such as regional climate factors and air quality at the regional scale [31,32], the degree of democracy and employment rate at the national scale [33,34], and urbanization levels and city size at the urban scale [35,36]. However, limited studies focus on the collective built environment in communities and its impact on subjective well-being.

Except for collective built environment factors, individual background also plays a vital role in shaping residents' subjective well-being. Existing research has identified that demographic backgrounds, such as cultural backgrounds, professions, and income, can lead to varying demands for the built environment, affecting residents' satisfaction with the built environment and subjective well-being [37,38]. Considering the various needs and preferences of user groups in the built environment, some studies have explored the variability in subjective well-being by considering different demographic characteristics. For instance, Kang et al. found that subjective well-being is higher among women and older adults than among middle-aged individuals, with subjective well-being and income showing an inverted U-shaped distribution, where families with annual salaries between CNY 300,000 and 490,000 have the highest subjective well-being [39]. Gu et al. also discovered that women's subjective well-being is higher, with age and subjective well-being presenting a positive U-shaped distribution [40]. The effects of both the collective built environment and individual background factors in subjective well-being still need to be comprehensively studied to inform a more targeted environmental design.

There is not yet a consensus on how to design communities' built environments at the smallest homogenized spatial unit in order to measure and improve residents' subjective well-being or to meet residents' needs and enhance their subjective well-being. Previous designs of existing community-built environments, which are based on an intensive treatment of land and high-density land use development, lead to a more diverse population inhabiting these spaces during urbanization [41]. Research on the factors affecting residents' subjective well-being at the community level mainly includes neighborhood relations [42], building quality [43], human–environment relations, landscape quality [44–46], infrastructure elements [47], convenient production, and consumption elements [48,49]. Some researchers have begun to further consider the types of communities. For example, Gu found that urban residents care more about community types [40]. However, these studies did not specifically analyze the impact of community types on residents' subjective well-being. Although Zhan considered community types [50], they did not analyze the differences in subjective well-being among residents of different community types, focusing only on the subjective well-being of the elderly. However, the consistency and difference of the factors affecting residents' subjective well-being in different communities still need further exploration.

Therefore, to address these deficiencies, based on four types of communities, this paper first identifies different resident groups, considering subjective well-being, community types, and demographical characteristics via correspondence analysis. Then, this study compares the differences in the built environment and subjective well-being using one-way ANOVA. Finally, we comparatively analyze the impact mechanism of subjective well-being in different types of communities via regression analysis. This study aims to answer the following research questions: (1) What are the characteristics of subjective well-being and the corresponding residents in different communities? (2) What is consistent and different for subjective well-being and the built environment assessment among the residents? (3) What factors influence residents' subjective well-being in different communities? This study provides empirical evidence and a nuanced understanding of the complex interplay between the physical environment and the quality of life among different community resident groups. It prompts a reevaluation of existing community design, urging it to be more inclusive and to reflect diverse resident needs and preferences. By identifying and understanding the factors within the built environment that affect subjective well-being, urban planners and policymakers can adopt more human-centric approaches to environmental designs. Focused on designing communities to enhance subjective well-being, this study provides actionable insights that could guide national and local policies toward achieving Sustainable Development Goals.

## 2. Methods and Materials

### 2.1. Study Area

This study selected Beijing as its study area. Firstly, as the capital city, encompassing 16 districts, Beijing has experienced rapid urbanization since 2000, reaching an urbanization rate of over 90% by 2020, with an urban population reaching 20 million. Urbanization has been achieved within the Fifth Ring Road, with a high degree of homogeneity in the built environment and population density. Secondly, there has been a new phenomenon in Beijing's development of the built environment. In 2017, the population of Beijing showed a decline in the population of the central six districts for the first time in over twenty years, with a decrease in the proportion of the floating population, and continuous negative growth in the subsequent five years. By 2021, the population of permanent residents in Beijing decreased by 4000 from the previous year. Compared to a work-dominated preference in the past, the pursuit of subjective well-being has become the primary factor in the choice of residence. In the post-urbanization phase, the pursuit of subjective well-being in life determines the future development path of the city. Therefore, this study focuses on Beijing to explore environmental research and design to enhance residents' subjective well-being post-urbanization.

This paper selected the Haidian District, Chaoyang District, Dongcheng District, Xicheng District, and Fengtai District as study areas, which have a high degree of homogeneity in the built environment. In terms of community selection, combining previous studies and the original intentions of Beijing community construction [40,42–49], Beijing communities are divided into old communities, company housing communities, policy housing communities, and new commercial housing communities, as shown in Table 1. This study randomly selects four types of communities from each administrative district. The distribution of communities is shown in Figure 1

**Table 1.** Community Types and Corresponding Characteristics.

Community Type	Community Characteristics
Old Communities	The old urban streets and districts are often located in the city center areas (Dongcheng, Xicheng), with relatively small community activity spaces but strong neighborhood interactions (Figure 2).
Company Housing Communities	They are usually built with funding from institutions, self-built service facilities, and integration of community and institutional interactions (Figure 3).
Policy Housing Communities	These were constructed by city governments, real estate developers, or collective housing units with a social security nature, including affordable, limited-price, and low-rent housing communities (Figure 4).
New Commercial Housing Communities	These were developed by real estate developers as commercial housing communities characterized by a high architectural quality (Figure 5).



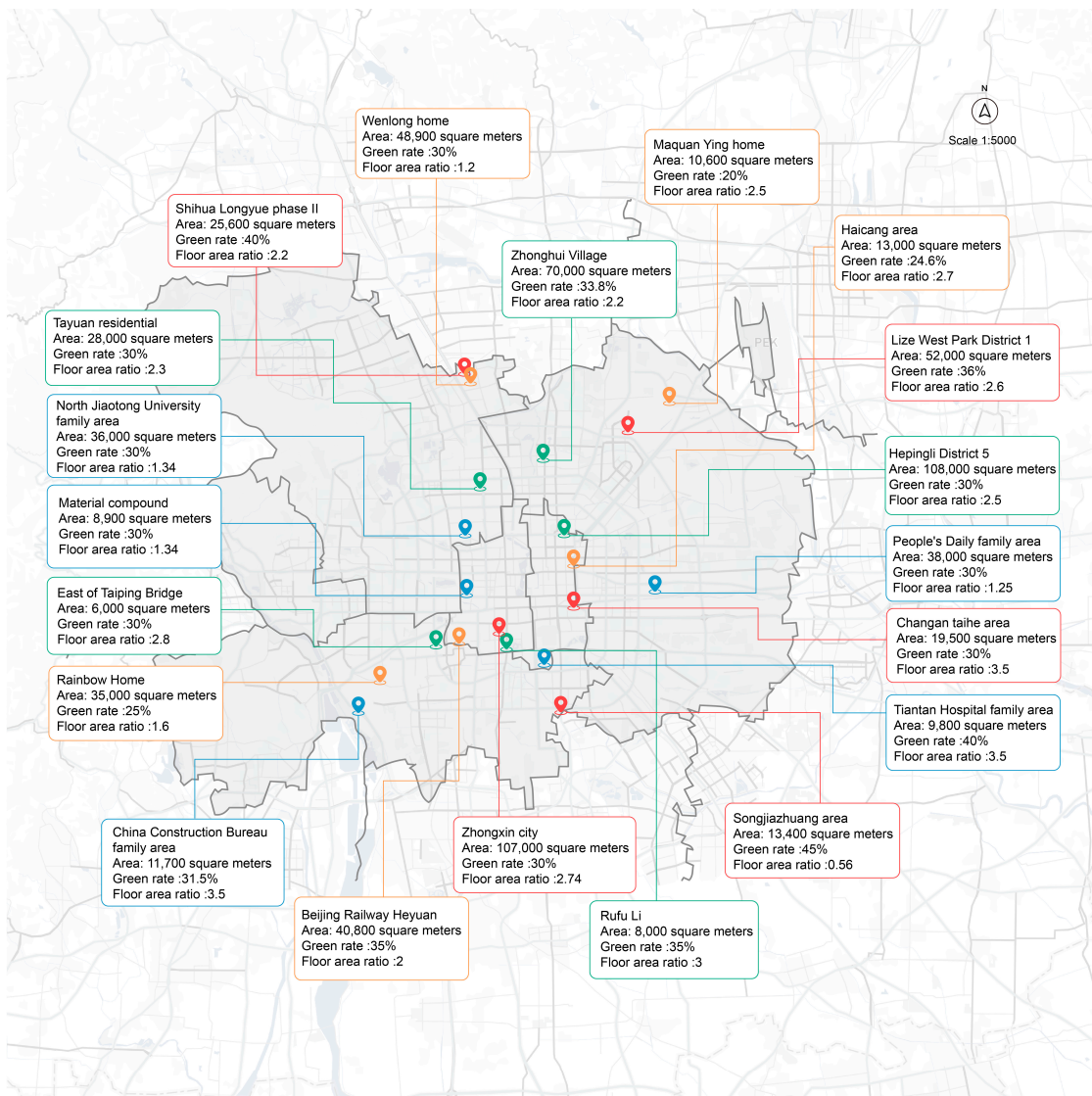


Figure 1. Community selection and basic information.



Figure 2. Tayuan Community.



**Figure 3.** Beijing Jiaotong University Residential Community.



**Figure 4.** Rainbow Garden Community.



**Figure 5.** China World City Community.

## 2.2. Questionnaire Design and Data Collection

This study employed a questionnaire to measure residents' subjective well-being and its influencing factors. The questionnaire primarily covers three aspects: demographic information, including gender, age, education, and income; subjective well-being measurement, including four physiological and four psychological items [51–54]; and built environment factors (Supplementary Materials). Based on previous studies (Table 2), this study integrates built environment dimensions and builds an indicator framework for the built environment assessments using five aspects, including neighborhood relationship elements, architecture and landscape elements, human–environment relation elements, infrastructure elements, and production and consumption elements. This study uses a Likert 5-level scale, where 1 represents strong dissatisfaction or strong disagreement, and 5 represents strong satisfaction or strong agreement.



**Table 2.** Indicator framework of the built environment.

Built Environment Dimensions	Indicators	References
Architecture and Landscape	E1 Green Coverage Rate	[55–57]
	E2 Environmental Cleanliness	
	E3 Openness of View	
	E4 Landscape Harmony	
	E5 Sound Environment Quality	
	E6 Crowdedness of Community	
	E7 Community Crowdedness	
	E8 Air Quality	
Neighborhood Relations	S1 Knowing Many Neighbors	[30,42,55,56,58]
	S2 Good Community Security	
	S3 Trust in Neighbors	
	S4 Willingness to Help Each Other	
	S5 Neighbors Activities	
	S6 Sense of Identification with Community Culture	
	S7 Social Interactions with Community Members	
Infrastructure	F1 Facility Accessibility	[42,56,58,59]
	F2 Facility Safety	
	F3 Diversity of Facilities	
	F4 Concentration of Facilities	
	F5 Road Connectivity	
	F6 Nighttime Illumination	
Human–environment relations	Sm2 Conditions for Cooling off	[30,60,61]
	Sm3 Building Crowdedness	
	Sm4 Aesthetic Quality of Surfaces	
	Sm5 Architectural Layout	
	Sm6 Landscape Distribution	
	Sm7 Security Environment	
	Sm9 Biodiversity of Flora and Fauna	
Production and Consumption	Sm10 Ground Water Drainage and Retention Conditions	[58,59]
	Sm11 Exercise Activities	
	Sm8 Vehicle Traffic Environment	
	Sm12 Convenience of Commerce	
	Sm13 Diversity of Commerce	

In each selected community, an interview was conducted with a community committee worker to understand the community conditions and assist with questionnaire distribution. Then, this study randomly selected 30–50 households per community and surveyed the adults of the households. This study distributed 1005 questionnaires and received 997 valid responses, according to completeness (all questions answered). The response rate was 99.2%, indicating high participant engagement and data reliability. However, 150 questionnaires were excluded due to failure to pass the pre-set screening questions, resulting in 847 questionnaires being included in the analysis for this study.

It was found that the Kaiser–Meyer–Olkin (KMO) measure exceeded 0.8, indicating the suitability of the dataset for factor analysis. However, the explained variance of the variables did not surpass 80%. Consequently, dimension reduction was deemed unnecessary. Stepwise regression was employed for collinearity diagnostics and regression analysis. Results indicated a Durbin–Watson value of around two and VIF values all less than 10, suggesting weak collinearity, negating the need for collinearity diagnostics.

The population characteristics are relatively consistent across the different communities. The gender ratio is close to 1:1 (Table 3). The age distribution is concentrated above 25 years, with the largest proportion being over 45 years. The ratio of the population with higher education (bachelor’s degree and above) is almost equal to those without higher education, with residents in new commercial housing and company housing communities having higher education levels. Residents’ income is concentrated between CNY 100,000 to 300,000, with lower incomes in old communities. Only 30% of the respondents are currently

employed. The frequency and duration of public space usage are similar among residents of different communities. As for frequency, most residents visit the community public space 1–2 times a day or less. As for the duration, most residents visit and stay in the community public space for less than 2 h.

**Table 3.** Demographic information of residents in each type of community.

Category		New Commercial Housing Communities	Old Communities	Company Housing Communities	Policy Housing Communities
Gender	Male	130	105	93	104
	Female	105	100	100	110
Age	≤25	40	30	11	14
	25–45	93	79	74	86
	>45	102	96	108	114
Education	Middle school and below	17	37	12	15
	High school, vocational	87	102	58	98
	Bachelor's	94	56	74	87
	Graduate and above	37	10	49	14
Frequency of Public Space Usage	Retired	51	49	73	67
	<1 time/day	108	91	77	97
	1–2 times/day	112	93	92	92
Duration of Public Space Usage	≥3 times/day	15	21	24	25
	<1 h	108	93	98	90
	1–2 h	91	72	50	71
	2–3 h	32	29	41	39
Annual Income	>3 h	4	11	4	14
	≤50,000	10	46	6	11
	50,000–100,000	30	66	12	47
	100,000–200,000	63	54	72	77
	200,000–300,000	93	28	83	61
Occupation	>300,000	39	11	20	18
	Government and public institutions	44	29	37	34
	Enterprise	36	26	20	24
	Freelancer	59	69	42	58
	Unemployed	23	13	7	18

### 2.3. Statistical Analysis

This study utilized correspondence analysis to portray the basic characteristics of subjective well-being among residents using the SPSS 22.0. A first round of correspondence analysis was initially applied to explore the basic relationships between variables, including residents' basic information and subjective well-being [62]. Subsequently, difference analysis was employed to compare differences in subjective well-being in population attributes. According to the results in the first round of correspondence analysis and difference analysis, this study conducted the final round of correspondence analysis to portray the characteristics of subjective well-being among different resident groups. Since the first round of differentiation measurements indicated that gender did not significantly distinguish between groups, the second round of correspondence analysis did not consider the gender characteristics of the population.

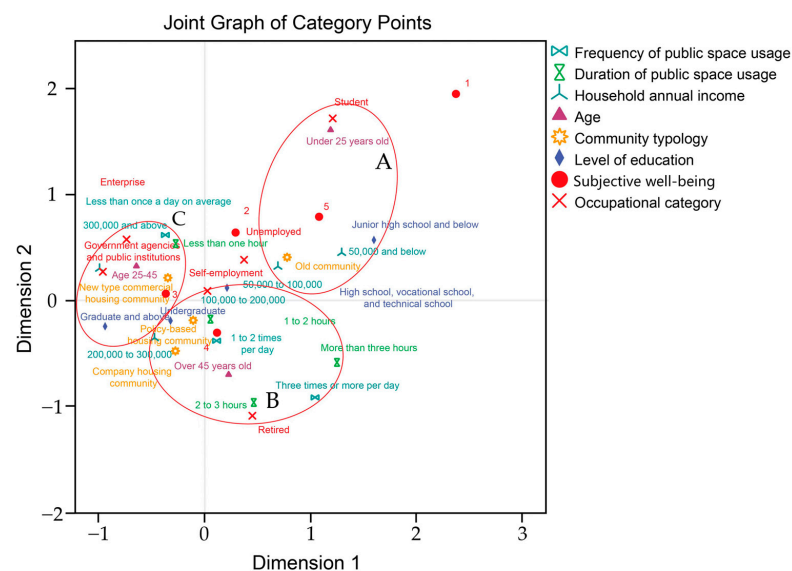
For variables that follow a normal distribution, one-way ANOVA was used to analyze differences in subjective well-being and built environment assessment among different groups using the SPSS 22.0 [63,64]. Non-parametric tests analyzed differences for variables that did not follow a normal distribution. To address the mechanisms influencing residents'

subjective well-being, this study conducted collinearity tests and general linear regression to identify factors that affect their subjective well-being using the SPSS 22.0.

### 3. Results

#### 3.1. Resident Depiction According to Different Subjective Well-Being Levels

According to the correspondence analysis results, there are three types of residents, depending on the type of community, level of subjective well-being, and demographic characteristics (Figure 6). Type A consists of residents with a higher level of subjective well-being, mainly living in old communities, with lower incomes, younger in age, and lower educational levels. Type B represents the residents with a moderate level of subjective well-being, primarily residing in unit or policy housing communities. They are generally of middle-range income, older, mostly freelancers or retired individuals, holding at least a bachelor's degree, and managing to maintain high-frequency visits to the community's public space. Type C includes residents with a lower level of subjective well-being, predominantly residing in new commercial housing communities. They are generally aged between 25 and 45 years with higher education levels, working mainly in government agencies, public institutions, or companies, with higher family annual incomes. However, these residents, significantly, seldom utilize the community-built environment in terms of frequency and duration of public space usage.



**Figure 6.** Depiction of residents. Note: the A, B, C represent the residents of Type A, Type B and Type C, and the number 1–5 represent the levels of subjective well-being.

#### 3.2. Differences in Subjective Well-Being and Built Environment Assessment among Communities

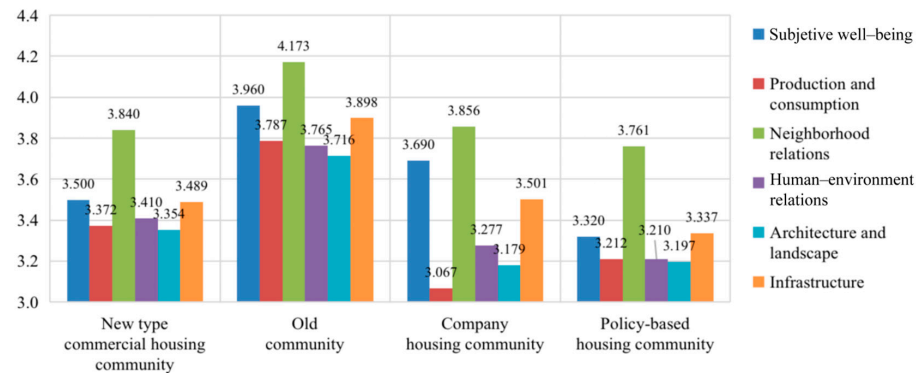
Overall, residents have relatively high levels of subjective well-being. Residents in the old community have the highest subjective well-being (3.93/5), while residents in policy housing communities have the lowest (3.37/5).

Residents in different communities have different satisfaction levels but a consistent rating order for the built environment components (Figure 7). As for the built environment assessment, residents in the old community have the highest satisfaction levels in all aspects of the built environment, while residents in policy housing communities have the lowest. Specifically, residents in the old community rate the built environment as 3.5/5. As for the built environment components, residents of all types of communities are most satisfied with neighborhood relations and least with architecture and landscape, as well as production and consumption.

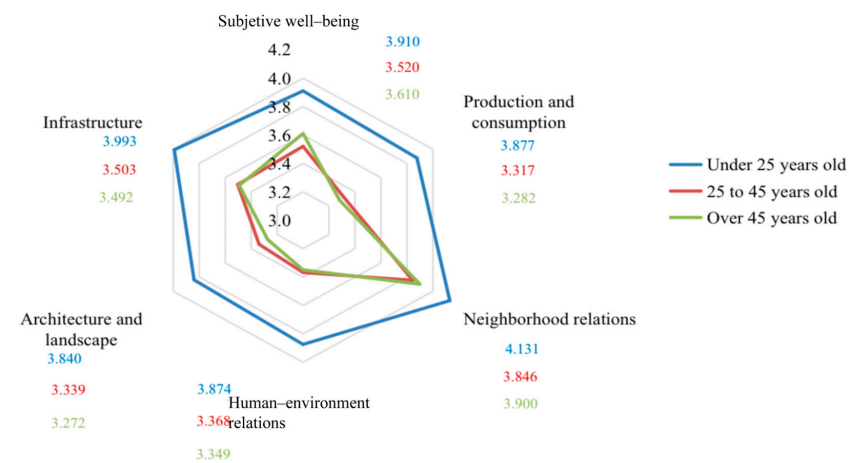
Age influences levels of subjective well-being and partially affects the evaluation of the built environment (Figure 8). According to the ANOVA test and corresponding multiple comparison test results, residents under 25 exhibit significantly higher levels of subjective



well-being and built environment assessments than the other two age groups. While there is a significant difference in subjective well-being between the other two age groups, there is no significant difference in satisfaction with the built environment components. This may be partly due to the relatively broad categorization of age groups and, on the other hand, to the more mature and stable perceptions of middle-aged and older populations.



**Figure 7.** Subjective well-being and built environment assessments among residents of four types of communities.

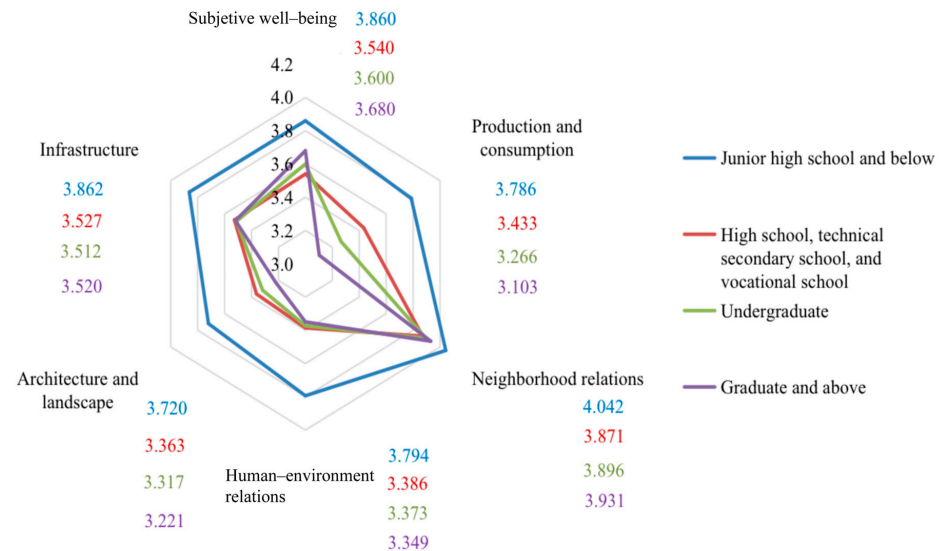


**Figure 8.** Subjective well-being and built environment assessments among residents of different age groups.

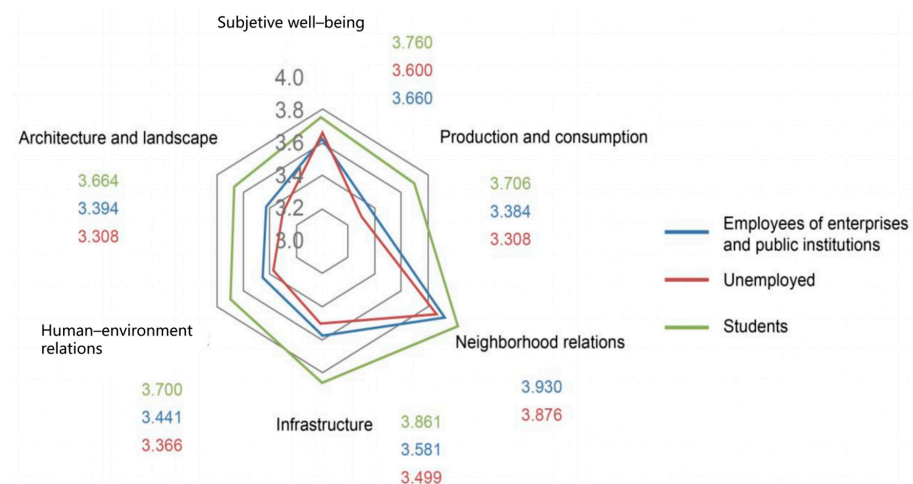
Education partially influences subjective well-being levels and the built environment’s evaluation (Figure 9). According to the ANOVA test and corresponding multiple comparison test results, residents with a below junior high school education show a significantly higher subjective well-being and built environment assessment than other educational groups. Residents with a high school education or higher have relatively consistent and lower levels of subjective well-being and built environment assessments. Specifically, residents of all educational levels express the highest satisfaction with neighborhood relations, while they show the least satisfaction with production and consumption, as well as architecture and landscape.

Occupation also influences subjective well-being levels and the built environment’s evaluation, except for neighborhood relations (Figure 10). Based on the population characterization results, residents are divided into three categories: those without employment (including freelancers, unemployed individuals, and retirees), corporate and public enterprise employees, and students. According to the ANOVA test and corresponding multiple comparison test results, the three occupation groups have significant differences in subjective well-being and built environment assessments, except for neighborhood relations. The student demographic exhibits the highest level for subjective well-being and the built

environment, whereas freelancers report the lowest levels for subjective well-being and the built environment. All three groups demonstrate the greatest satisfaction with neighborhood relations and the least satisfaction with architecture and landscape elements and aspects related to production and consumption.



**Figure 9.** Average subjective well-being and built environment assessments among residents of different educational levels.



**Figure 10.** Average subjective well-being and built environment assessments among residents of different occupations.

### 3.3. Influencing Mechanisms of Residents’ Subjective Well-Being

For overall residents, education level, overall built environment evaluations, and the four aspects of the built environment positively enhance residents’ subjective well-being (Table 4). Regarding the built environment, seven indicators in the four categories of the built environment factors significantly affect residents’ subjective well-being. Specifically, the green coverage rate (0.190), the overall natural environment of the community (0.163), and the overall functional layout of the community (0.134) have the highest effects on residents’ subjective well-being. Duration of public space usage (0.068), education level (0.066), and groundwater drainage (0.061) have the highest effects on residents’ subjective well-being. Most built environment factors positively impact subjective well-being, except for architectural density, where a higher density correlates with lower subjective well-being levels. The indicators of production and consumption do not significantly impact residents’ subjective well-being.

**Table 4.** Influencing mechanisms of residents' subjective well-being.

Category	Indicators	Overall	New Commercial Housing Communities	Old Communities	Company Housing Communities	Policy-Based Housing Community
Basic Information	Age		−0.108 ** (0.031)	0.139 *** (0.001)		
	Education Level	0.066 *** (0.008)	0.118 *** (0.007)			
	Occupation					
	Frequency of Public Space Usage	0.074 *** (0.008)	0.120 ** (0.049)			
Overall assessment	Duration of Public Space Usage	0.068 ** (0.028)		0.109 *** (0.005)		
	A1 Overall Natural Environment of Community	0.163 *** (0.000)			0.206 ** (0.013)	
	A2 Overall Functional Layout of Community	0.134 *** (0.001)		0.253 *** (0.000)		
	E1 Green Coverage Rate	0.190 *** (0.000)		0.097 ** (0.044)	0.253 *** (0.007)	0.236 *** (0.003)
Architecture and Landscape	E2 Environmental Cleanliness					
	E3 Openness of View				0.152 ** (0.024)	
	E4 Landscape Harmony	0.078 ** (0.018)	0.207 *** (0.003)			
	E5 Sound Environment Quality					
Neighborhood Relations	E6 Crowdedness of Community					
	E7 Community Crowdedness					
	E8 Air Quality	0.090 *** (0.005)		0.208 ** (0.014)		
	S1 Knowing Many Neighbors					
Infrastructure	S2 Good Community Security					
	S3 Trust in Neighbors					
	S4 Willingness to Help Each Other			−0.270 *** (0.006)		
	S5 Neighbors Activities					
Human-environment relations	S6 Sense of Identification with Community Culture					
	S7 Social Interactions with Community Members	0.131 *** (0.001)				
	F1 Facility Accessibility					
	F2 Facility Safety	0.080 ** (0.038)				
Production and Consumption	F3 Diversity of Facilities					
	F4 Concentration of Facilities					
	F5 Road Connectivity					
	F6 Nighttime Illumination					
Human-environment relations	Sm2 Conditions for Cooling off					
	Sm3 Building Crowdedness	−0.085 ** (0.043)				
	Sm4 Aesthetic Quality of Surfaces					
	Sm5 Architectural Layout					
Production and Consumption	Sm6 Landscape Distribution			−0.082 *** (0.001)		
	Sm7 Security Environment	0.075 *** (0.009)				
	Sm9 Biodiversity of Flora and Fauna					
	Sm10 Ground Water Drainage and Retention Conditions	0.061 ** (0.013)			0.174 *** (0.002)	
Production and Consumption	Sm11 Exercise Activities			−0.013 *** (0.006)		
	Sm8 Vehicle Traffic Environment					
	Sm12 Convenience of Commerce			0.016 *** (0.008)		
	Sm13 Diversity of Commerce					

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ .

The factors influencing residents' subjective well-being vary significantly across different types of communities. In new commercial housing communities, population character-

istics, such as age and education level, are the factors that mainly influence the residents' subjective well-being. For the old communities, there are more indicators in four aspects of the built environment that play an essential role in influencing subjective well-being than in other communities. For company housing communities, architecture and landscape and human–environment relations are the main factors that influence the residents' subjective well-being. However, only the green coverage rate impacts subjective well-being in policy housing communities.

For the residents in new commercial housing communities, age, education level, overall built environment evaluations, and architecture and landscape affect residents' subjective well-being. Specifically, older age correlates with lower subjective well-being ( $-0.108$ ), whereas higher education levels ( $0.118$ ) and more frequent use of public spaces ( $0.120$ ) are associated with higher subjective well-being. Among specific elements, only the harmony of the landscape ( $0.207$ ) affects residents' subjective well-being, but it is the most important factor that influences the residents' subjective well-being.

For residents of old communities, age, duration of public space usage, overall built environment evaluations, and six indicators in four aspects of the built environment affect residents' subjective well-being. Residents of older age are associated with a higher level of subjective well-being ( $0.139$ ), possibly due to stronger human–environment relations. Furthermore, longer usage of public spaces indicates a higher level of subjective well-being ( $0.109$ ), reflecting a deeper interaction between elderly residents and their community environment. As for architecture and landscape, the green coverage rate ( $0.097$ ) and air quality ( $0.208$ ) positively influence the residents' subjective well-being. Regarding neighborhood relations, more mutual help correlates with dissatisfaction ( $-0.270$ ). As for factors related to human–environment relations, higher satisfaction with exercise activities correlates with lower subjective well-being ( $-0.013$ ), suggesting that subjective well-being and its influencing factors should not be simplistically viewed as unidimensional. The convenience of commercial services effectively enhances subjective well-being in old communities ( $0.016$ ).

#### 4. Discussions

##### 4.1. *The Subjective Well-Being and Built Environment Conditions in Different Communities*

The results indicate that subjective well-being and the built environment assessment is the highest in old communities, but the lowest in policy housing communities. The high level of subjective well-being and built environment assessments in old communities might be attributed to the renovation of old communities, which has also been proven in studies of Spain, Australia, and the USA [65–67]. Recently, the Beijing government issued the “Beijing Old Communities Renovation Work Reform Plan” to address the deteriorated and poor conditions of community environments that had been neglected over the years. Moreover, the plan involved soliciting public opinion extensively, ensuring that the renovations met the residents' needs. For instance, in Taipingqiao Dongli, multiple open spaces within the community were renovated to improve the condition of public spaces, while in Tayuan Community, illegal constructions were demolished, and the green spaces were uniformly refurbished. The environments of the five selected communities were improved to some extent as a result. In contrast, policy housing communities generally scored lower in all aspects, possibly because affordable housing is often located further from the city center. These locations' spatial and social isolation significantly contribute to less hospitable living conditions, making it challenging to meet the actual needs of low-income residents.

The distinct satisfaction levels across different community types underscore the critical role of urban policy and governance in influencing residents' subjective well-being. The superior satisfaction levels reported by old community residents across various dimensions can be attributed to the social cohesion and established networks often found in such environments. This observation emphasizes the positive impact of community bonds on individual subjective well-being [68,69]. This finding aligns with previous studies highlighting the significance of social connections and community engagement in enhancing subjective well-being. For instance, Helliwell et al. (2018) found that social participation

significantly boosts life satisfaction [70]. In Japan, research indicates that neighborhood social capital positively influences mental health [71]. In contrast, the lower satisfaction levels in company housing communities, particularly regarding production and consumption and architecture and landscapes, highlight the need for a holistic approach to urban planning that integrates economic opportunities with aesthetic and functional considerations [72]. Studies in various countries also emphasize this need. For example, research in the United States suggests that mixed-use developments can enhance both economic vibrancy and community well-being [73]. Similarly, European urban planning models advocate for integrating green spaces and aesthetic elements to improve life quality in urban settings [74].

#### *4.2. The Demographic Difference in Subjective Well-Being and Built Environment Assessments*

This study categorized residents into three types: higher subjective well-being levels mainly residing in old communities, moderate subjective well-being levels living in unit and policy housing communities, and lower subjective well-being levels mainly in new commercial housing communities. The higher subjective well-being in old communities might be related to their lower life expectations and a stronger sense of community belonging. Life satisfaction often correlates with how personal expectations are met, with lower expectations making it easier for residents to feel satisfied [75,76]. Additionally, residents of old communities might have developed stronger neighborly relations due to long-term residence, an important factor in enhancing subjective well-being [77]. For other communities, despite their higher economic status and educational levels, their subjective well-being levels were not as high as those of old communities. This observation aligns with the theory of relative deprivation, which suggests that an individual's subjective well-being may decrease if their achievements seem less compared to their reference group, even if their absolute conditions have improved [78]. Studies have supported this theory, showing that individuals' well-being is influenced more by relative than absolute income [79]. Particularly for new commercial housing communities, despite higher household incomes, the underutilization of community public spaces indicates a lack of sufficient community belonging and social interactions, another key factor affecting subjective well-being [80].

Our findings reveal that younger residents exhibit significantly higher levels of subjective well-being and built environment assessments. This indicates a potential alignment with the aspirations and values of younger generations, who may prioritize different aspects of the built environment than their older groups. This aligns with the observations that younger individuals tend to have more adaptable perceptions of their living spaces, influenced by contemporary societal values and trends [81,82]. Additionally, the higher subjective well-being and satisfaction levels in built environments among younger residents might suggest that recent advancements in urban design are more aligned with the preferences and needs of younger populations. This resonance could be due to younger individuals' openness and adaptability to new concepts in living environments that prioritize sustainability, technology integration, and flexible spaces—features that are increasingly emphasized in modern urban planning. This inclination towards new urban designs might also be bolstered by younger individuals' greater propensity for embracing change, allowing them to more readily appreciate and find satisfaction in innovative urban landscapes that differ from traditional setups [83,84].

Educational levels play a complex role in shaping residents' subjective well-being and satisfaction with the built environment, with those possessing lower educational qualifications reporting higher levels of satisfaction. This could reflect a discrepancy between expectations and reality, where higher education levels may correlate with higher expectations [85]. The universal appreciation for neighborhood relations across educational levels underscores the fundamental human need for social connection, highlighting the intrinsic value of community ties [86,87]. As for occupation, the contrasting levels of satisfaction observed among students, freelancers, and corporate or public enterprise employees suggest that one's occupation influences how one interacts with and perceives



the built environment. Students reported the highest satisfaction. On the other hand, freelancers displayed the lowest levels of satisfaction, which could be attributed to the precarious nature of their work and the need for a supportive environment that fosters creativity and productivity [88].

#### *4.3. The Influencing Mechanism of Subjective Well-Being Considering Different Types of Communities*

The influencing mechanism of subjective well-being should consider the needs of different age groups in various community types. For residents of new commercial housing communities, older residents are associated with lower subjective well-being levels, possibly related to younger people's higher adaptability and openness, compared to older individuals' lower adaptability and openness. Young people may find it easier to integrate into new environments and derive satisfaction from them. Conversely, for residents of old communities, age and subjective well-being are positively correlated, possibly reflecting older individuals' attachment to the community and the value of established community networks. This aligns with research on the relationship between age and subjective well-being, demonstrating different perceptions and experiences of subjective well-being across age groups [89].

Residents' subjective well-being under different community types is influenced by different built environment factors. Residents of company housing communities are more concerned with the overall natural layout of the community. Neighborhood relations, infrastructure, and production and consumption conditions do not significantly impact subjective well-being. Company housing communities, usually designed for employees of specific units or institutions and their families, might have considered overall environmental harmony and natural beauty from the beginning. Residents' focus on the natural layout might reflect expectations for a high-quality living environment, especially in urban settings where natural elements enhance life quality. This echoes theories in environmental psychology which emphasize the restorative effects of natural environments on psychological well-being [22,46]. For example, a study in the Netherlands found that access to green spaces significantly improves mental health and overall life satisfaction. Similarly, research conducted in South Korea shows that urban parks and green spaces play a critical role in reducing stress and enhancing the quality of life [90]. Residents of company housing communities might have tighter community connections due to shared work backgrounds and social networks, which could make the direct impact of neighborly relationships on subjective well-being less significant than other factors [91]. Meanwhile, these communities might already possess infrastructure and services meeting basic living needs, so further improvements in these areas might not significantly increase subjective well-being. Policy housing aims to provide economically suitable living conditions, emphasizing cost-effectiveness, and might lack in some aspects (e.g., design, facilities) compared to commercial housing. In this context, the green coverage rate becomes a key factor for enhancing residents' subjective well-being because green spaces not only serve an aesthetic function but also contribute to improving air quality, reducing noise pollution, and providing leisure and recreation spaces directly related to residents' daily life quality [91–94]. Research shows that green spaces positively impact mental health and well-being [37,95].

An interesting finding is that, in old communities, the more help is provided among residents, the less satisfied they are. This might reflect internal social pressures or excessive demands on individuals' time and resources. In close-knit community relationships, too many social demands can lead to stress, especially when such help becomes expected or obligatory. This phenomenon is widely discussed in social psychology, where excessive social support is sometimes seen as a burden, affecting individual psychological health and subjective well-being [96]. For example, a study in Sweden found that excessive social demands in tight-knit communities can lead to increased stress and lower overall satisfaction among residents [97]. Similarly, in the United States, a study by Thoits (2011) demonstrated that while social support generally benefits mental health, too much support

can become burdensome and negatively impact individual well-being [98]. Additionally, while mutual help reflects community cohesion in dense community networks, it can limit individual autonomy. Too many community duties and expectations might conflict with individual needs and desires. This conflict can lead to dissatisfaction, especially in cultures that highly value individual autonomy. This highlights the complex impact of community participation on individual subjective well-being, noting that while community involvement can enhance social capital and individual satisfaction, excessive community demands might conflict with individual autonomy, leading to dissatisfaction [99].

In older communities, the negative correlation between the reasonableness of landscape distribution and residents' subjective well-being might be more complex. Firstly, residents of older communities might be conservative toward any form of change, even if those changes are intended to improve their living conditions. This conservative attitude partly stems from people's sense of belonging and security in familiar environments, providing psychological comfort and stability. Environmental psychology offers a framework to understand this phenomenon, emphasizing the importance of harmonious relationships between people and their environments on individual psychological health [100]. Residents' emotional attachment to their living places, especially in older communities, significantly affects their acceptance of environmental changes [101]. Thus, measures aimed at improvement might be seen as threats to this harmonious relationship, eliciting residents' maladaptation or dissatisfaction. This finding relates to the dual impact on social cohesion and individual satisfaction. Moreover, the physical environment of a community profoundly affects residents' social behaviors and interactions. Residents of older communities might have established stable social networks and daily behavior patterns based on the current environmental layout. Changing these environments, even to improve life quality, might disrupt these established patterns, causing residents to feel uneasy and dissatisfied. Residents' reactions are not only averse to the changes themselves but also fear losing the community belonging and identity established over a long period of living.

#### *4.4. Policy Recommendations*

Comprehensive strategies to enhance overall well-being should cater to the distinct characteristics of different community types. New commercial housing communities should focus on improving landscape harmony and the quality of public spaces to meet residents' demands for aesthetic and harmonious living environments. It is advised to enhance community appeal by increasing green coverage, improving the aesthetic design of public facilities, and optimizing landscape layouts. Simultaneously, encouraging activities in communal places within the community can foster interactions among residents and a sense of belonging. The renovation of older communities should pay closer attention to the actual needs of residents and their sense of human–environment relations, avoiding dissatisfaction due to excessive commercialization or over-regulation. Renovation efforts could focus on improving infrastructure quality and the usability of public spaces while preserving the community's cultural characteristics and historical memory. For residents of older communities, strengthening community services and support systems, especially social support for elderly residents, can effectively enhance their well-being. Company housing communities and policy housing should emphasize increasing green coverage and environmental quality while improving neighborly relations and community participation. This includes creating more public gathering points and organizing community activities to enhance interactions and cooperation among neighbors. For policy housing, considering its unique community location and resident composition, measures to provide convenient transportation links and increase employment opportunities are needed to reduce residents' feelings of social isolation.

Personalized strategies for enhancing well-being based on population characteristics are also necessary. For the young, highly educated population living in new commercial housing communities, it is suggested to develop more career development platforms and social activity spaces, such as co-working spaces, community learning centers, and creative

workshops. This not only satisfies their pursuit of a high-quality living environment but also promotes their professional and personal growth. Additionally, increasing resources related to education and technology and encouraging residents to participate in community innovation projects can improve their sense of community belonging and subjective well-being. For middle-aged and older residents of older communities, the focus should be on improving and providing more age-friendly health and leisure facilities, such as building walking paths, fitness areas, and easily accessible community health points to meet their health and lifestyle needs. Considering the social pressure issues that may arise from close neighborhood relations within the community, it is recommended to set up dedicated community support services, such as regularly holding mental health workshops and providing conflict resolution and community counseling services, to maintain a harmonious community environment and alleviate residents' psychological burdens. Furthermore, for residents of company housing communities and policy housing, policies should focus on improving the quality of public spaces and green environments, for instance, by optimizing green coverage and enhancing the diversity and accessibility of public facilities, to enhance the attractiveness of these communities as places to live. Especially for policy housing communities, enhancing the completeness and diversity of community services to address potential spatial and social isolation issues can improve their quality of life and well-being.

## 5. Conclusions

Taking four typical community types in Beijing as examples, this article explores the differences in subjective well-being among residents and their influencing mechanisms, revealing several key findings: (1) Residents can be categorized into three distinct types, based on community type, subjective well-being, and demographic characteristics. Type A comprises residents with higher levels of subjective well-being, predominantly living in older communities. These individuals typically have lower incomes, younger ages, and lower educational levels. Type B exhibits moderate subjective well-being and primarily resides in unit or policy housing communities. Type C includes residents with lower levels of subjective well-being, mainly living in new commercial housing communities. (2) Overall, residents exhibit relatively high levels of subjective well-being. Residents in old communities report the highest subjective well-being scores (3.93/5), while those in policy housing communities report the lowest (3.37/5). Across all residents, the green coverage rate (0.190), the overall natural environment of the community (0.163), and the functional layout of the community (0.134) are the most influential factors. (3) The factors affecting residents' subjective well-being differ substantially across community types. In new commercial housing communities, demographic characteristics such as age and education level are the primary influencers of subjective well-being. In old communities, multiple indicators related to the built environment play a critical role. For residents in company housing communities, architectural and landscape features, along with human-environment relations, are the main determinants of subjective well-being. In contrast, in policy housing communities only the green coverage rate significantly impacts subjective well-being. However, it is noteworthy that some counterintuitive phenomena emerged among the influencing factors, such as more mutual help among neighbors correlating with less satisfaction, and higher satisfaction with exercise activities correlating with less subjective well-being. This might be due to the concentrated age distribution of the surveyed population, leading to biased results, or it could indicate that from the residents' perspective, these counterintuitive phenomena represent their true demands, similar to the reverse qualities in the Kano model. Future research by the authors will further investigate these counterintuitive phenomena.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/land13060793/s1>, Survey Questionnaire on the Impact of the Built Environment on Residents' Subjective Well-being.

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