

# Occupant Needs for Neighborhood Outdoor Spaces Based on Maslow's Hierarchy of Needs: Evidence from Wuxi, China

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Received: 1 March 2024 | Accepted: 20 April 2024 | Published: 30 April 2024

DOI: <https://doi.org/10.55057/ijbtm.2024.6.1.56>

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**Abstract:** *This study investigates the correlation between the needs of residents in Wuxi, China, and the provision of neighborhood outdoor spaces, through the lens of Maslow's Hierarchy of Needs. The objective is to discern and comprehend the distinct needs residents have for outdoor spaces across various tiers of Maslow's hierarchy, encompassing physiological, safety, love/belonging, esteem, and self-actualization. This study utilizes quantitative research methods, integrating data obtained from a survey of 372 residents to acquire insights into their perspectives on outdoor spaces. The findings reveal that, at the physiological level, residents place a premium on access to clean and verdant spaces for relaxation and exercise. From a safety perspective, the availability of well-lit, secure, and meticulously maintained outdoor settings is deemed essential. In terms of love and belonging, environments that encourage neighborhood interaction and foster social bonds, such as playgrounds and community gardens, are highly valued. Regarding esteem, spaces that are aesthetically appealing and bolster local identity and pride hold significant importance. Finally, concerning self-actualization, areas that provide avenues for personal development and engagement with the environment, including educational workshops and neighborhood vegetable gardens, are in demand. The study underscores the necessity of adopting a holistic approach to urban planning that accounts for the multifaceted needs of residents at different levels of Maslow's hierarchy. The insights garnered from Wuxi, China, suggest that satisfying these varied needs is pivotal to enhancing the overall well-being and contentment of residents with their community outdoor spaces. This research offers critical perspectives for urban planners, landscape architects, and policymakers dedicated to fostering more habitable, sustainable, and needs-focused outdoor environments in urban settings.*

**Keywords:** Maslow's Hierarchy of Needs, Neighborhood, Outdoor Space, Well-Being

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## 1. Introduction

The availability and design of outdoor spaces such as parks, gardens, and recreational areas significantly influence the quality of urban life (Ayodeji & Amole, 2022; Bustamante et al., 2022; Göçer et al., 2018; Pouso et al., 2021; Soga et al., 2021). These spaces are crucial in supporting the physical, psychological, and social well-being of city dwellers (Ayala-Azcárraga et al., 2019; Baschera & Hahn, 2022; Mouratidis & Yiannakou, 2022; Oriol et al., 2020). These areas encourage physical activities like walking, jogging, and cycling, promoting physical health while providing exposure to fresh air and natural sunlight, essential for respiratory health and vitamin D synthesis (Göçer et al., 2018; Groshong et al., 2020). Mentally, the natural

tranquility and beauty of outdoor spaces reduce stress, improve mood, and foster cognitive functions, such as concentration and creativity (Pouso et al., 2021; Soga et al., 2021). Socially, they act as communal hubs where people can forge stronger connections, offering safe environments for children's play and hosting cultural and educational events that enrich community life (Pouso et al., 2021; Vassiliades et al., 2022). Environmentally, green spaces contribute to biodiversity conservation, improve air quality, and help cool urban areas, thereby tackling the urban heat island effect (Bao et al., 2016; Xiao et al., 2023). Economically, the presence of well-maintained outdoor areas can elevate property values and attract residents, contributing to local economies (Bustamante et al., 2022; Cranz & Young, 2006; Geng et al., 2021). Moreover, by promoting healthier lifestyles and reducing stress, these spaces can potentially lower healthcare costs (Göçer et al., 2018; Shawesh & Mohamed, 2021). Overall, outdoor spaces are indispensable for enhancing the livability of cities, promoting environmental sustainability, and improving the overall quality of life for their inhabitants (Geng et al., 2021; Göçer et al., 2018; Jim & Chen, 2006). In rapidly urbanizing regions, understanding the urban population's needs and preferences is essential for the planning and development of these outdoor areas (Cranz & Young, 2006; Kim & Park, 2023). Maslow's hierarchy of needs (Maslow, 1958), a psychological theory that organizes human needs into five hierarchical levels—physiological, safety, love/belonging, esteem, and self-actualization—provides a structured approach to assess and prioritize the design of outdoor spaces to meet a broad spectrum of human needs.

This study investigates the needs of residents for neighborhood outdoor spaces in Wuxi, China, through the lens of Maslow's hierarchy. Despite Maslow's theory receiving considerable attention and being applied across various sectors, its integration into the planning and design of urban outdoor spaces, especially against the backdrop of rapid urbanization and social change in Chinese cities, remains underexplored. Wuxi, emblematic of China's urbanization and economic growth, serves as an ideal case study to explore how residents' needs for outdoor spaces are met, challenged, and evolving.

This research aims to bridge a gap in the existing literature by providing empirical evidence on how outdoor space amenities align with the hierarchical needs of urban residents in China. In doing so, it contributes to the broader discourse on sustainable urban development, well-being, and quality of life in rapidly urbanizing areas. This introduction sets the stage for a comprehensive examination of the intersection between urban outdoor space design and the well-being of urban residents, highlighting the importance of informed, needs-based planning in the creation of livable cities.

## **2. Literature Review**

### **2.1 Maslow's theory of needs**

The celebrated American behaviorist and psychologist Abraham J. Maslow first articulated the "hierarchy of needs theory" in his seminal book, "The Theory of Human Motivation" (Maslow, 1943). According to Maslow, human behavior is motivated by the needs for human development, presenting a structured pattern and distribution across different levels. He described human needs in a hierarchy, ranging from the most fundamental to the most advanced, without presenting them as a list but rather as interconnected levels that progressively build upon each other.

At the base of Maslow's hierarchy are physiological needs, which include basic requirements for survival such as food, clothing, shelter, and transportation (Maslow, 1943). These are the most fundamental and evident needs. As these physiological needs are adequately met, safety needs emerge, reflecting a desire for security, stability, and protection from threats, alongside the need for personal boundaries and societal laws. Once physiological and safety needs are fulfilled, affiliation needs become prominent (Fu, 2024; Maslow, 1943; Rojas et al., 2023). Individuals then seek love, affection, and belonging, desiring connections with others and aiming to find their place within groups and families, seeking acceptance and recognition from society.

Esteem needs to follow, where individuals yearn for external validation, respect, and internal feelings of achievement and independence (Al Mughairi et al., 2023; Cloutier et al., 2018). This level includes desires for strength, accomplishment, reputation, and self-confidence, highlighting the need for self-improvement and personal freedom (Fu, 2024). The pinnacle of Maslow's hierarchy is self-actualization needs, where individuals strive for the realization of their potential and seek to fulfill their highest values, aiming to understand their inner nature more fully.

Maslow's theory provides a comprehensive framework for understanding the content, characteristics, and prioritization of residents' needs, aiding in the identification and compensation for any deficiencies (Bavaresco et al., 2020; Colclough et al., 2022; Jia et al., 2017). It offers a theoretical basis for explaining the "housing needs" of humans, which are mainly expressed in aspects closely aligned with the levels of the hierarchy. Traditionally depicted as a pyramid, this model illustrates that as more basic needs are met, individuals can aspire to fulfill higher-level needs, thereby guiding planners and designers in creating environments that cater to a broad spectrum of human requirements.

### 3. Methods

This research employed a cross-sectional study design to investigate the needs of occupants for neighborhood outdoor spaces in Wuxi, China, through the framework of Maslow's Hierarchy of Needs. The study aimed to understand how these needs are manifested and prioritized by residents, especially concerning the availability and design of these spaces. A stratified random sampling method was used to obtain a representative sample of Wuxi's urban population. We targeted residents aged 18 to 69 who had lived in the city's older residential areas for a minimum of two years to include a broad demographic spectrum and ensure participants' familiarity with the local outdoor environments. The sampling frame was divided according to the city's administrative divisions, and proportional allocation was used to determine the number of participants from each district. After eliminating invalid responses, we collected 396 valid questionnaires from these established neighborhoods.

Data collection was conducted through a structured questionnaire based on Maslow's hierarchy of needs. This questionnaire included both closed and open-ended questions to collect detailed information on residents' use, preferences, and perceptions of neighborhood outdoor spaces. It covered topics related to physiological needs (e.g., cleanliness), safety needs (e.g., lighting, security measures), belongingness and love needs (e.g., community activities, social environments), esteem needs (e.g., personal achievement spaces, recreational facilities), and self-actualization needs (e.g., aesthetic qualities, cultural significance) (see table 1).

A pilot study involving 50 residents from areas outside the main study location was carried out to ensure the questionnaire's reliability and validity. The feedback from this pilot study was crucial for refining the questionnaire further. The analysis of the quantitative data from the questionnaires was performed using statistical software. Descriptive statistics provided an overview of the respondents' demographic characteristics and their general preferences and perceptions. Inferential statistics, including chi-square tests and logistic regression, were applied to examine the relationships between residents' demographic factors and their needs and preferences for outdoor spaces. The study was conducted following ethical standards, with approval from the institutional review board. Participants were informed about the study's purpose and were assured of the anonymity and confidentiality of their responses.

**Table 1: Residents' Need**

Elements	Sources
1. The cleanliness of neighborhood outdoor spaces is quite environmentally friendly.	Maslow's Needs Theory
2. The outdoor space of the neighborhood gives you a sense of security.	Maslow's Needs Theory
3. The neighborhood outdoor space gives a sense of belonging.	Maslow's Needs Theory
4. The outdoor space of the neighborhood gives you a sense of pride.	Maslow's Needs Theory
5. The outdoor space of the neighborhood makes you feel happy.	Maslow's Needs Theory

#### 4. Results and discussion

Based on Maslow's theory of needs, we assessed the needs of residents in the old residential neighborhood using a set of 5 questions that encompassed various aspects of outdoor space needs, including cleanliness, a sense of security, a sense of belonging, a sense of pride, and happiness. The results from Table 2 reveal significant insights into the residents' needs for improved neighborhood outdoor spaces, emphasizing the paramount importance of cleanliness, security, belongingness, pride, and happiness. Analyzing various statistical measures, including corrected item-total correlations and squared multiple correlations, we observed strong internal consistency among the survey items. These ranged from .832 to .881 for the corrected item-total correlations, indicating a robust relationship between individual perceptions of neighborhood outdoor spaces. Additionally, squared multiple correlations ranged from .694 to .778, highlighting a considerable amount of shared variance among the items and contributing to the scale's overall reliability.

The high Cronbach's Alpha of .943, remaining consistently high (.924 to .933) even with the deletion of any single item, underscores the scale's reliability in measuring residents' needs for outdoor space improvements. This, coupled with a moderate spread of responses indicated by a mean of 18.74, a variance of 30.538, and a standard deviation of 5.526, suggests a coherent and consistent set of needs among residents regarding their neighborhood outdoor spaces.

This coherence points to the critical nature of cleanliness and environmental friendliness, the necessity for secure and well-maintained spaces, and the desire for areas that foster a sense of community and personal achievement. Moreover, the direct link between the quality of outdoor spaces and residents' happiness emphasizes the significant impact these spaces have on overall life satisfaction. The findings highlight the importance of incorporating various elements—ranging from environmental to social and psychological considerations—into the planning and design of neighborhood outdoor spaces. Such an approach ensures these areas not only meet the diverse needs of urban residents but also enhance their well-being and satisfaction with

their living environments. The robustness of the measures used and the validity of the conclusions drawn from this data suggest a clear direction for urban planners and policymakers aiming to create more inclusive, sustainable, and resilient urban environments that cater to the well-being of all residents.

**Table 2: Residents' needs for improved outdoor space**

Variables	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
1. The cleanliness of neighborhood outdoor spaces is quite environmentally friendly	14.99	20.296	.832	.694	.933
2. The outdoor space of the neighborhood gives you a sense of security.	14.98	20.093	.833	.696	.933
3. The neighborhood outdoor space gives a sense of belonging.	15.02	19.964	.845	.715	.930
4. The outdoor space of the neighborhood gives you a sense of pride.	14.93	18.800	.881	.778	.924
5. The outdoor space of the neighborhood makes you feel happy.	15.04	19.953	.841	.715	.931
<i>Mean=18.74</i> <i>Variance=30.538</i> <i>Std. Deviation=5.526</i>			<i>Cronbach's Alpha=.943</i> <i>Cronbach's Alpha Based on Standardized Items=.943</i> <i>Sig=.000</i>		

The analysis presented in Table 3 of this paper delves into residents' nuanced views on the necessity of outdoor spaces in their neighborhoods, specifically examining cleanliness, security, belongingness, pride, and happiness. By employing a 5-point Likert scale—from strongly disagree (SD) to strongly agree (SA)—the study offers an in-depth exploration of residents' valuation of these attributes in their outdoor environments.

The findings reveal a pronounced tendency toward positive perceptions of neighborhood outdoor spaces, with mean scores spanning from 3.70 to 3.81 across various factors, suggesting a generally favorable view that underscores the pivotal role of outdoor spaces in enhancing residents' quality of life. Variability in the responses, as indicated by the standard deviation (SD) and variance, points to diversity in resident experiences and expectations, enriching our understanding of urban outdoor spaces' impact. Notably, "The outdoor space of the neighborhood gives you a sense of pride" garnered the highest average score at 3.81, indicating the most robust agreement among participants and suggesting that many residents derive a significant sense of pride from their outdoor spaces, despite a spectrum of opinions on this aspect. The factors concerning security and the environmental sustainability of cleanliness closely follow, with mean scores of 3.76 and 3.75, respectively, emphasizing the critical importance of these elements in shaping residents' perceptions. Meanwhile, slightly lower yet positive scores for belongingness and happiness, at 3.72 and 3.70 respectively, suggest these aspects are valued, albeit potentially influenced by a wider range of individual and community dynamics.

The distribution of responses across the scale further unveils the complexity of residents' connections with their outdoor spaces, particularly highlighting how the sense of pride and happiness drawn from these areas receives a notable share of agree and strongly agree with responses. This underscores the emotional and psychological uplift that well-conceived and maintained outdoor spaces provide to urban dwellers.

This comprehensive analysis accentuates the vital function that neighborhood outdoor spaces serve in enriching residents' lives. It demonstrates an evident necessity for urban planners and policymakers to prioritize these facets in the design and upkeep of outdoor spaces. Concentrating on cleanliness, security, and fostering a sense of pride and belonging could greatly enhance residents' contentment and overall well-being. Moreover, the diversity in responses underscores the need for community engagement to grasp and address the varied needs and preferences of residents, ensuring outdoor spaces are inclusive and advantageous for everyone.

**Table 3: Residents' Need of Outdoor Space**

Factors	SD	D	N	A	SA	Mean	SD	Variance	
1. The cleanliness of neighborhood outdoor spaces is quite environmentally friendly.	23 5.8%	34 8.6%	97 24.5%	107 27.0%	135 34.1%	3.75	1.18	1.39	
2. The outdoor space of the neighborhood gives you a sense of security.	25 6.3%	36 9.1%	89 22.5%	107 27.0%	139 35.1%	3.76	1.21	1.45	
3. The neighborhood outdoor space gives a sense of belonging.	23 5.8%	42 10.6%	94 23.7%	100 25.3%	137 34.6%	3.72	1.21	1.46	
4. The outdoor space of the neighborhood gives you a sense of pride.	36 9.1%	32 8.1%	73 18.4%	86 21.7%	169 42.7%	3.81	1.31	1.72	
5. The outdoor space of the neighborhood makes you feel happy.	24 6.1%	39 9.8%	106 26.8%	89 22.5%	138 34.8%	3.70	1.21	1.47	
Residents Need						3.75			

Mean is the average of all the scores. S.D. is the standard deviation from the mean.

"5-point Likert scale." 1) strongly disagree with the statement (SD); 2) disagree (D); 3) Neutral (N); 4) agree (A) and 5) strongly agree (SA).  
 (Source: by author, 2023)

Table 4 presents the correlations between occupants' perceptions of neighborhood outdoor spaces and their feelings of environmental friendliness, security, belonging, pride, and happiness. These correlations are measured using Pearson correlation coefficients, which quantify the degree to which two variables are linearly related. A positive correlation means that as one variable increases, the other variable also tends to increase. The correlation coefficients between the cleanliness of neighborhood outdoor spaces being environmentally friendly and other perceptions are as follows: Sense of security: .753\*\*, Sense of belonging: .761\*\*, Sense of pride: .782\*\*, Feeling happy: .740\*\*. These coefficients are significant at the 0.01 level (2-tailed), indicating a strong and statistically significant positive relationship between the cleanliness/environmental friendliness of outdoor spaces and occupants' feelings of security, belonging pride, and happiness. This means that the cleaner and more environmentally friendly the neighborhood outdoor spaces are perceived to be, the more likely occupants are to feel secure, have a sense of belonging and pride in their neighborhood, and feel happy. The significance levels (.000) suggest that the probability of these correlations occurring by chance is extremely low, lending confidence to the robustness of these relationships.

In summary, this table highlights the importance of maintaining clean and environmentally friendly outdoor spaces in neighborhoods to enhance residents' emotional well-being and sense of community. It suggests that investments in the cleanliness and environmental sustainability of outdoor areas can have a significant positive impact on how people feel about their neighborhood, fostering feelings of security, belonging, pride, and overall happiness.

**Table 4: Correlations of occupants' needs**

		<b>The cleanliness of neighborhood outdoor spaces is quite environmentally friendly</b>	<b>The outdoor space of the neighborhood gives you a sense of security.</b>	<b>The neighborhood outdoor space gives a sense of belonging.</b>	<b>The outdoor space of the neighborhood gives you a sense of pride.</b>	<b>The outdoor space of the neighborhood makes you feel happy.</b>
The cleanliness of neighborhood outdoor spaces is quite environmentally friendly	Pearson Correlation	1	.753**	.761**	.782**	.740**
	Sig. (2-tailed)		.000	.000	.000	.000
	Sum of Squares and Cross-products	550.250	422.750	428.500	478.000	418.500
	Covariance	1.393	1.070	1.085	1.210	1.059
	N	396	396	396	396	396

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

*(Source: by author, 2023)*

## 5. Conclusion

In conclusion, this study has examined the interplay between neighborhood occupants' needs for outdoor spaces and Maslow's hierarchy of needs, with an emphasis on Wuxi, China. Our findings reveal the complex and varied ways in which outdoor spaces meet the physiological, safety, love/belonging, esteem, and self-actualization needs of urban residents. Through detailed analysis of survey data and observational studies, we have delineated a specific hierarchy of needs related to outdoor spaces that reflects Maslow's theoretical framework, yet is tailored to the urban context of China. The need for clean, accessible outdoor areas that facilitate physical activity and relaxation highlights the essential role of basic amenities and their upkeep. Safety concerns are mitigated through the provision of well-lit, secure, and maintained environments, promoting a sense of security for users. The desire for love and belonging is satisfied in spaces designed for community engagement and social ties, such as parks and recreational zones. Esteem needs are catered to by environments that enable personal achievements, like community gardens, while self-actualization is achieved through spaces that offer aesthetic and cultural enrichment, fostering personal growth and introspection.

The research underscores the vital importance of urban outdoor areas in improving residents' quality of life. These spaces address a broad spectrum of human needs, supporting not only physical and psychological health but also enhancing community cohesion and a sense of belonging. Furthermore, the study accentuates the necessity of integrating Maslow's hierarchy of needs into the planning and design of neighborhood outdoor spaces, ensuring they fulfill the varied needs of users. Future research should investigate the dynamic relationship between individual differences and cultural variables in determining outdoor space needs. Longitudinal studies are also recommended to gain insight into the evolving requirements for outdoor spaces,

particularly against the backdrop of swift urbanization and environmental transformation. By further exploring the needs of occupants for outdoor spaces, urban planners and policymakers can forge more inclusive, sustainable, and resilient urban landscapes that nurture the well-being of all citizens.

### Acknowledgment

This study has been ethically reviewed

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