



POST OCCUPANCY EVALUATION OF THE NEW CITY PARK USING MULTICRITERIA DECISION-MAKING METHODS

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Please cite this article as: Akten, S. (2025). Post occupancy evaluation of the new city park using multicriteria decision-making methods. *Turkish Journal of Forest Science*, 9(2), 371-392.

ESER BİLGİSİ / ARTICLE INFO

Araştırma Makalesi / Research Article

Geliş 28 Temmuz 2025 / Received 28 July 2025

Düzeltilmelerin gelişi 2 Eylül 2025 / Received in revised form 2 September 2025

Kabul 3 Ekim 2025 / Accepted 3 October 2025

Yayımlanma 27 Ekim 2025 / Published online 27 October 2025

ABSTRACT: One of the biggest problems facing urban citizens today is time. In this intense and fast-paced environment, parks are among the most important areas that meet humanity's need to stop and rest. Parks are urban open and green spaces that can appeal to all users. The problems experienced with rapid urbanization significantly affect the physical and mental health of the public. Studies emphasize that urban open and green spaces improve quality of life and contribute significantly to people's physical and mental well-being. While studies focus on the planning, design, implementation, and management phases of open and green spaces, the usage and post-usage evaluation phases are often neglected. However, taking into account the thoughts and desires of park users (children, youth, seniors, etc.) is an important process for the effective management of the area. This research will contribute to identifying the landscape quality of parks, specifically focusing on the New City Park in Isparta's Çünür Neighborhood. It will provide local governments and administrators with insights into which quality criteria to prioritize when improving multifunctional green and open spaces within the context of sustainable development. Furthermore, it will offer an opportunity to evaluate these prioritized criteria for future landscape designs. Thus, through the exchange of knowledge, it aims to provide an effective guide for sustainable and user-oriented landscape design and management by adopting park quality criteria as a reference for strategic spatial planning approaches in other cities as well.

Keywords: User satisfaction, urban park quality, AHP-TOPSIS analysis, post occupancy evaluation.

ÇOK KRİTERLİ KARAR VERME YÖNTEMLERİ İLE YENİ ŞEHİR PARKI KULLANIM SONRASI DEĞERLENDİRMESİ

ÖZET: Kentli insanın günümüzde en büyük sorunlarından biri zamandır. Bu yoğun ve hızlı tempoda ise insanoğlunun durup dinlenme ihtiyacını karşılayacak en önemli alanların başında parklar gelmektedir. Parklar kullanıcıların tümüne hitap edebilen kentsel açık yeşil alanlardır. Hızlı kentleşme ile birlikte yaşanan sorunlar halkın fiziksel ve ruhsal sağlığını önemli ölçüde etkilemektedir. Yapılan çalışmalar kentlerde açık ve yeşil alanların yaşam kalitesini arttırdığı ve insanların fiziksel ve ruhsal iyileşmelerine önemli ölçüde katkı sağladığını vurgulamaktadır. Çalışmalarda açık ve yeşil alanlarının planlama, tasarım ve uygulama aşaması ile yönetim aşamalarının üzerinde durulurken, kullanım ve kullanım sonrası değerlendirme aşamaları genellikle ihmal edilmektedir. Ancak park kullanıcılarının (çocuklar, gençler, yaşlılar, vb.) düşünce ve isteklerinin göz önünde bulundurulması alanın etkin yönetimi için önemli bir süreçtir. Bu araştırma, Isparta Çünür Mahallesi'nde bulunan Yeni Şehir Parkı özelinde parkların peyzaj kalitesini ortaya koyarak yerel yönetimlere ve yöneticilere sürdürülebilir kalkınma bağlamında çok işlevli yeşil ve açık alanları iyileştirmede hangi kalite ölçütlerine odaklanılacağını ve bundan sonraki peyzaj tasarımları için önceliklendirilen bu ölçütlere yönelik değerlendirme imkanı sağlamasına katkıda bulunacaktır. Böylece sahip olunan bir bilgi alışverişi ile diğer şehirlerde de stratejik mekânsal planlama yaklaşımı olarak park kalite ölçütlerini referans olarak kabul eden sürdürülebilir ve kullanıcı odaklı peyzaj tasarım ve yönetimi için etkili bir kılavuzu sunmaya çalışmaktadır.

Anahtar kelimeler: Kullanıcı memnuniyeti, kent parkı kalitesi, AHP-TOPSİS analizi, kullanım sonrası değerlendirme

INTRODUCTION

Open and green spaces, which are an integral part of urban green infrastructure, not only contribute to creating a favorable living environment in cities, but also contribute to improving the social, physical, and psychological well-being of city residents. Open and green spaces, which establish a balance between nature and the city and enable recreational activities, should meet criteria such as being accessible to people of all ages, being sufficiently safe and peaceful, and being accessible and reachable. Important strategic decisions must be made to improve the quality of parks and alleviate the various challenges faced by city residents (Huang et al., 2017; Dade et al., 2020; Huai & Voorde, 2022).

Cities' sustainability and renewal strategies focus primarily on open and green spaces in the urban environment. Urban open and green spaces provide social and psychological services that are vital for the livability of cities and the well-being of their residents, in addition to their environmental effects such as wind and noise filtration and microclimate creation (Ulrich, 1981; Kaplan & Kaplan, 1989). However, research on the effects of urban open and green spaces on psychological perception is relatively limited, and most studies focus on issues such as residents' health, satisfaction, and environmental responsibility behavior (Zhai, 2016; Fan et al., 2017; Liu et al., 2021). Cities directly influence people's behavior and relationships, as well as the associations in individuals' minds. The psychological perception of urban parks, which provide users with opportunities for encountering, meeting, and engaging in social and cultural interactions, is subjective rather than concrete, and it is difficult to obtain definitive quantitative evaluation results due to the absence of objective measurement indicators (Gai et al., 2022).

The functionality of parks in cities and their role as part of urban life and social spaces are important in terms of showcasing the “quality” aspect of urban life (Emür & Onsekiz, 2007). After implementation, it is important to regularly evaluate how visitors perceive urban open and green spaces, the purposes for which they use them, the types of interactions they engage in, and the extent to which these spaces physically enable social and cultural activities. This is important for user satisfaction and for ensuring the effective management of the space. The information obtained as a result of the evaluations is an important source of data in terms of serving as a successful example for future designs.

This study examines the effects of city parks on users through multi-criteria decision-making methods and focuses on how these parks can be evaluated in terms of the livability, equity, and sustainability of cities. In order to increase the objectivity of the criteria used in the evaluation process and ensure measurability, the aim is to establish a theoretical basis that will reduce uncertainties based on the subjective judgments of experts. In this regard, the aim is to reduce subjectivity in the evaluation indicators, to evaluate the general characteristics of urban parks more systematically in line with the real needs of users, and to offer a scientific, measurable, and user-oriented method for the development of urban open and green spaces.

In this study, the structural capability of AHP in weighting decision criteria was combined with TOPSIS's power to rank alternatives based on their proximity to the ideal solution; additionally, user feedback was integrated into the process by utilizing the POE approach. The tendency of the AHP method to rely on subjective judgments was attempted to be reduced by controlling the consistency ratio; this was supported by the more objective and quantitative evaluation structure of TOPSIS.

As a result, this study contributes significantly to the literature by developing a multi-criteria, user-centered evaluation model based on measurable criteria, free from subjective judgments, and offering a scientific and applicable approach to the planning and improvement of urban open and green spaces.

Quality Criteria for Urban Parks

Urban green spaces are among the most important building blocks of the urban ecological structure (Akten & Yücedağ, 2022). Open and green spaces play a significant role in meeting the physical, functional, cognitive, emotional, and social needs of city dwellers in their daily lives. Parks, which constitute urban open and green spaces, serve many functions, such as meeting the needs of users through active and passive recreational activities, facilitating socialization, increasing interest in the environment, promoting understanding of social values, and helping to protect urban flora and fauna.

Parks, which are an important part of cities, must be planned, designed, and managed in a way that ensures a balanced distribution of functions, is accessible and available to users according to their wishes and needs, and is aesthetically and functionally appropriate, with equal characteristics in terms of quality and quantity at the urban and neighborhood levels. According to Polat (2012), visitors' perceptions and preferences regarding parks must be taken into account in the planning and design processes of urban parks. The quality indicators of parks may vary according to activities and uses, activity diversity, accessibility, perceptibility, the comfort and image of the park, the maintenance and security status of the park, and the sense of belonging (Başalma et al., 2019).

Activities are what draw users to different events within the park. When looking at the relationship between space quality and park activities, the variety of activity areas helps increase the desire to participate in social activities (Gehl, 1987). Therefore, it is necessary to provide users with opportunities to participate in different activities, ensure the presence of different user groups (families, friends, etc.), make the area attractive for visits at different times of the day and year, and ensure that the physical design and layout of the park encourages its use throughout the night (Project for Public Spaces, 2000).

The second quality criterion is that these areas should be easily accessible from outside and that parking areas should be easy to find. The importance of how transportation connections within and around the park are linked and how proper signage contributes to the creation of a functional unity and the enhancement of transportation opportunities should be taken into consideration (Baljon, 1992; Wang et al., 2015). In the process of evaluating accessibility criteria related to the park, the adequacy of the park area, the visibility/perceptibility of the park area from outdoor spaces, the openness of the park area's entry and exit points, the relationship between pedestrian axes and the target points users wish to reach, the presence of directional elements and information signs within the area, the availability of public transportation systems that provide adequate access to the park, the presence of bicycle lanes for bicycle, scooter, etc. user, and the adequacy of parking areas in the vicinity of the park area in case of private vehicle use should be questioned (Project for Public Spaces, 2000). Additionally, the park's plan should be sufficiently clear and well-defined for first-time users to enhance its perceptibility. Readable spaces provide users with a sense of accessibility to the functions within the area. Additionally, they should support the spatial accessibility of the space for use by people with disabilities.

When evaluating the visual image and comfort of a park, the following factors must be considered: the first impression given by the park, the desire and opportunity for people to take photos in the area, the presence of urban fixtures and elements within the park area, the level of compliance with standards during the design phase, the number and adequacy of seating and relaxation areas, and the availability of technological facilities. Users prefer attractive environments in their spatial usage behaviors. Considering the characteristics of the visual environment and its effects on people enables the creation of better designed and managed parks, thereby improving the quality of life. Urban fixtures play a major role in the evaluation of visual image and comfort criteria. Since inadequate maintenance of these fixtures affects their effective and efficient use, park management must have maintenance and repair programs in place.

The aesthetic characteristics of open and green spaces influence people's reactions and play an important role in their behavior. The aesthetic and visual harmony of a park includes elements such as the material, color, and texture of surfaces, as well as flooring, fixtures, lighting elements, and the selection and use of plant material, all of which have a direct impact. In urban areas, lighting elements, paving materials, information and directional signs, rest and seating units, water surfaces, artistic fixtures and elements are urban fixtures that support and add value to the aesthetics of the park (Ter, 2011).

When evaluating the social interaction criterion related to a park, the following should be taken into consideration: whether users use the park alone or in groups, the presence of gathering areas in the park, the level of use of urban furnishing elements, and the park's acceptance and ownership status (Project for Public Spaces, 2000). The adequacy of activity areas is also important in terms of increasing social cohesion and facilitating participation in social and cultural activities.

In terms of management criteria, the presence of management within the park and the availability of a security point that users can reach in case of any adverse situation has a positive impact on users. In addition, decisions that are made with stakeholder participation increase the effectiveness of management.

MATERIALS AND METHODS

Materials

The study was conducted in the New City Park, located in the Çünür neighborhood of Isparta province, which opened in 2023. The park is located approximately 10 km from the city center of Isparta and has an area of 24,000 m². New City Park offers spaces for both relaxation and social interaction with its large open and green areas, child-friendly facilities, sports opportunities specifically for young people, and accessibility-focused design. According to 2024 data, the population of the Çünür neighborhood in Isparta Province is 27,492, accounting for 10.1% of the 272,797 population of the central district of Isparta Province (TUİK, 2024). The presence of residential areas in the immediate vicinity of the park, as well as the Isparta University of Applied Sciences, Süleyman Demirel University, and student dormitories, constitutes the park's largest user potential. Additionally, its proximity to the Isparta bus terminal provides alternative usage opportunities for users coming from outside the city.

Method

The AHP-TOPSIS-POE evaluation system, which combines qualitative research methods, was used to create a high-quality living environment for users in the New City Park area designated as the study area and to evaluate the use of this area.

AHP (Analytic Hierarchy Process)

AHP is a flexible and quantitative method for solving complex decisions. It is used for weighting criteria and it is powerful in determining the importance levels of decision criteria. AHP is a flexible and quantitative method for solving complex decisions (Akten, 2013). It is based on the ranking of objectives and alternatives in pairs according to their relative importance. In comparing criteria, the decision-maker considers only two objectives at a time, thereby simplifying the process of weighting objectives. However, evaluating each alternative according to each stakeholder's objectives is a challenging task. Due to the challenges in the evaluation system and the importance of ranking alternatives relatively, the TOPSIS evaluation model is introduced at this stage.

TOPSIS (Technique for Order Preference by Similarity to Ideal Solution)

It ranks alternatives relative to each other. Evaluation is performed by calculating their distances from the best and worst ideal solutions. TOPSIS simplifies and automates the decision-making process without the need to create value functions or subjectively select a limited number of alternatives, thereby making the process more manageable and enabling the evaluation of more alternatives than the AHP method (Prakash & Barua, 2015; Topçu et al., 2023). In this context, the AHP and TOPSIS methods were used together in the scope of the research.

POE (Possibility and Opportunity Evaluation)

POE considers uncertainty and possibility situations and is used in the evaluation of risks and opportunities. In the literature reviews conducted on the POE (Zhu et al., 2023; Alp, 2025), it is observed that the POE method is frequently used to measure user satisfaction and test the performance of the field, and it provides important data in determining user desires and needs in the field. POE focuses on users and their needs when determining the relationship between users and spaces, and ensures that the impact of design decisions on space performance is understood (Öztürk & Temel, 2019). Thus, based on the data obtained in the design decision-making process, recommendations can be developed to meet user demands, and these recommendations can be incorporated into the process as feedback to solve problems in existing environments (Akad & Çubukçu, 2006). The POE method was used to reduce the impact of subjective factors and calculation errors on the results and to verify the accuracy of the AHP-TOPSIS evaluation system regarding the current usage status of the New City Park.

While the AHP-TOPSIS-POE evaluation results are consistent in terms of overall ranking, there are some differences in specific details. AHP and TOPSIS analysis emphasize the logical consistency of the data based on the structural correlation between criteria and the importance weights of the criteria. POE analysis, on the other hand, focuses on user experiences and subjective preferences that may be influenced by individual preferences and better reflects users' true feelings. Therefore, instead of using a single evaluation method, combining subjective and objective evaluation methods increases the impact on the analysis of real results.

While leveraging AHP's strength in weighting criteria, TOPSIS provides an objective evaluation advantage in ranking alternatives. Also POE method enables a comprehensive assessment in uncertainty and risk analysis. These methods have been integrated and used together to provide more comprehensive, reliable, and accurate decision support.

Methodology Framework

In the application phase of the method, the opinions and preferences of users were included in the evaluation process, in addition to the opinions of experts, in the New City Park area designated as the study area. In the first phase, the AHP-TOPSIS method was used to evaluate the level of quality perception of the park area by experts. In this context, the selection and evaluation of quality criteria to be examined in the study area were based on the literature (Zeisel, 1995; Madden, 2001; Atabek, 2002; Yücel & Yıldızcı, 2006; Bayram, 2007; Emür & Onsekiz, 2007; Project for Public Spaces, 2009; Beyli & Yeşil, 2019; Karakaya & Taşlı, 2019; Öztürk & Temel, 2019; Akten & Sunar, 2022). In the second stage, a survey method was used for POE analysis to increase the objectivity and representativeness of the evaluation system.

The AHP and TOPSIS methods consist of 5 steps:

1-Stakeholder analysis: In the first step, the group of experts for the evaluation process is determined.

2-Definition of criteria: In the second step, criteria are determined for the decision problem and organized in a hierarchical structure.

3-Identification of preferences for criteria: In the third step, experts rate how important each criterion is in the decision problem. In AHP analysis, criteria are compared one-on-one and reciprocally based on their importance values to determine how important each criterion is. In

this study, a nine-point ratio scale (Saaty importance scale) was used for pairwise comparisons (Table 1).

Table 1. Saaty Importance Scale (Saaty, 1980)

Weight	Definition
1	Equal importance
3	Moderate importance
5	Strong importance
7	Very strong importance
9	Absolute importance
2,4,6,8	Intermediate values

The scores were then converted into a matrix to create a pairwise comparison matrix. The comparison matrix shows the importance levels of the criteria relative to each other within a certain logic. The weights of objectives and attributes are calculated using the eigenvector method. This method takes into account the possibility of inconsistencies in pairwise comparisons; for example, even if objective a is twice as important as objective b and b is three times as important as objective c, this does not mean that a is six times more important than c. Consistency is measured by a consistency ratio (CR) and can be used as a tool to evaluate inconsistencies arising from the ranking of the judgment matrix (Ersoy, 2021). Saaty (2000) suggests that the consistency ratio (CR) should not exceed 10%.

4-Creation of alternatives: In the fourth step, alternatives are created. These alternatives differ in terms of the degree to which they fulfill the various qualities of the field.

5-Ranking of alternatives: Finally, alternatives are ranked according to how well they fulfill the attributes and the importance of the criteria. In this study, TOPSIS criteria were used to rank each attribute and to make a general ranking of the criteria based on the weights assigned to the criteria in the AHP analysis.

The TOPSIS method consists of 6 steps:

1-Vector normalization: Since attributes are measured on different scales, the outputs of alternatives in terms of attributes are normalized to values between 0 and 1. Eqs. (1);

$$R_{ij} = \begin{bmatrix} r_{11} & \dots & r_{1n} \\ \vdots & \ddots & \vdots \\ r_{m1} & \dots & r_{mn} \end{bmatrix} \tag{1}$$

2-Calculation of weighted normalized ratings: The criterion weights determined by AHP are multiplied by the normalized values in step 1. Eqs. (2);

$$V_{ij} = \begin{bmatrix} wr_{11} & \dots & wr_{1n} \\ \vdots & \ddots & \vdots \\ wr_{m1} & \dots & wr_{mn} \end{bmatrix} \tag{2}$$

3-Identification of positive-ideal and negative-ideal solutions: The largest and smallest values of the weighted normalized ratings for each criterion are identified and calculated as positive-ideal and negative-ideal solutions. Eqs. (3)-(4);

$$A^+ = \{(max v_{ij} | j \in J), (min v_{ij} | j \in J')\} \quad i = 1,2,3, \dots, m \tag{3}$$

$$A^- = \{(min v_{ij} | j \in J), (max v_{ij} | j \in J')\} \quad i = 1,2,3, \dots, m \tag{4}$$

4-Calculation of separation measures: The normalized values of each criterion in each alternative are compared with the values of the positive and negative-ideal solutions. The distances of each normalized value from the positive and negative-ideal values are calculated, and a measure of each alternative's separation from the two extremes is provided. The greatest separation is the separation between the positive and negative-ideal solutions, and all other solutions are ranked according to their separation from these two. Eqs. (5);

$$S_i^- = \sqrt{\sum_{j=1}^m (V_{ij}^- - V_j^-)^2}, \quad S_i^+ = \sqrt{\sum_{j=1}^m (V_{ij}^- - V_j^+)^2} \quad (5)$$

5-Calculation of similarities to the positive ideal solution: The measure of each alternative's deviation from the negative ideal solution is divided by the sum of its deviations from the positive and negative ideal solutions. This provides a value between 0 and 1 for each alternative, depending on its position relative to these two extremes. Eqs. (6);

$$C_i^+ = \frac{S_i^-}{S_i^- + S_i^+} \quad (6)$$

6-Ranking of preferences: Alternatives are ranked according to how close they are to the positive ideal solution.

In the second stage of the POE method analysis, an observation study was conducted to explain at what times and for what purposes visitors came to the research area and to determine what activities these individuals wanted to do most. The Systematic Observation phase was conducted on 4 different days and times in June and July to observe the actions and behaviors of visitors to the area. The frequency of use of recreational areas is one of the most important criteria affecting area quality. Therefore, when evaluating usage, assessments were made based on weekdays and weekends, as well as morning, afternoon, and evening hours. The observation type was on-site observation. Through field studies, the activity and usage of the research area, transportation and access, comfort and image, aesthetic and visual harmony, social interaction, and management criteria were revealed in terms of area usage and environmental relationships. Qualitative data obtained within the scope of POE was evaluated using thematic analysis methods. During this process, common views reflecting users' experiences of the space were identified, and main themes were created based on these views. The analysis highlighted themes such as user satisfaction, spatial functionality, accessibility, comfort, and safety. Thematic analysis enabled a deeper interpretation of the data and a better understanding of user needs.

One of the most common approaches used to assess user satisfaction in urban green spaces is the use of surveys, which enable us to understand users' thoughts and expectations in detail and generally provide an opportunity to analyze users' perceptions of their spatial experiences (Thompson et al., 2016). After the field observation studies, a survey was conducted to ensure the accuracy of the evaluation process. Çünür Neighborhood is a growing and transforming residential area. In addition to this, new housing projects, proximity to the university, and increasing population dynamics bring constant change. In the survey conducted with users, the neighborhood's population was evaluated to understand the balance between permanent and temporary residents, their demands, and conflicts. Considering the population data of the Çünür neighborhood in the city center of Isparta (TÜİK, 2024) (27,492 people), it was determined that the survey would represent the population of 270 people with a 5% margin of error and a 90% confidence interval (Kılbaş & Cevahir, 2023). The survey was conducted on different

days and times of the week. The survey, consisting of three sections, collected data on the socio-demographic characteristics of users (age, gender, etc.), their spatial behavior (usage time, frequency of use, etc.), and the purpose of use of the space and its shortcomings. The surveys were analyzed to determine the satisfaction levels related to the park's quality criteria. Thus, the results of the verbal qualitative survey data obtained across the entire area were presented in both quantitative and qualitative terms. The Chi-square (χ^2) test was used to determine whether the cross-tabulations were independent of each other. The Z test was applied to test the significance of the differences between the ratios. The results obtained were interpreted considering the 1% ($p < 0.01$) and 5% ($p < 0.05$) significance levels.

RESULTS AND DISCUSSION

Observation Findings

Observing a recreation area and evaluating people's opinions about it enables the area to become a successful place (Fischler, 2000). In this regard, it is important to determine the attitudes, perceptions, and preferences of users (Talay et al., 2010). In the unstructured observation study, the behaviors, activities, and actions of individuals in the field were recorded in the observation form. The actions taken during the observation included:

In terms of activity and usage criteria, people spent time in the grass areas and sitting/resting areas, walked, played sports, and used the children's playground. There is a 500 m² open sports area in 3 different areas within the park. 1 tennis court (642 m²), 1 artificial turf pitch (775 m²), 2 basketball courts (300 m²), 4 children's playgrounds (1600 m²), 15 pergolas, 6 benches, and 1 covered seating area. It was observed that the activities people participated in varied depending on the weather; on rainy and cloudy days, users preferred the covered seating areas and on sunny days, they preferred the outdoor seating areas. It was determined that the children's playgrounds in the study area were used more frequently at all times of the day. It was observed that the percentage of people sitting on the grass and walking along the paths increased on hot days.

For transportation and accessibility, there are two parking areas within the park. The first parking lot is 2,200 m², while the other is 17,814 m². The park's hardscape features vary between concrete and interlocking paving stones for the walkways. The walking trail is 434 meters long. There are no bicycle paths within or around the park.

For comfort and visual reasons, there is no security unit within the park. However, thanks to the high and low-lying lighting available, the park is as active at night as it is during the day.

In terms of aesthetic and visual harmony, The total open and green area of the park is 10,157 m². The tree species used within the park are: *Quercus robur* "Fastigiata Koster" L. (70), *Cupressus × leylandii* A.B. Jacks & Dallim (40), *Picea pungens* Engelm. (26), *Fraxinus excelsior* L. (23), *Aesculus hippocastanum* L. (23), *Platanus orientalis* L. (20), *Morus alba* L. (16), *Malus floribunda* Siebold ex Van Houtte (9), *Acer negundo* L. (7), *Cupressus macrocarpa* Hartw. ex Gordon (5), *Picea abies* (L.) H. Karst (5), *Cupressus sempervirens* L. (4), *Ficus benjamina* L. (3), *Lagerstroemia indica* (L.) Pers. (2), *Prunus domestica* L. (1), *Prunus cerasus* L. (1), *Cedrus libani* A. Rich. (1), *Juglans nigra* L. (1), *Prunus dulcis* (Mill.) D.A. Webb (1), *Acer platanoides* Royal Red L. (1)

Shrub species; *Euonymus fortunei* (Turcz.) Hand-Maz. (50), *Euonymus japonicus* Aurea Thunb. (40), *Nandina domestica* Thunb. (40), *Rosa sp.* L. (30), *Lavandula officinalis* L. (30), *Abelia × grandiflora* (Rovelli ex André) Rehder (15), *Juniperus horizontalis* Moench (13), *Buxus sempervirens* L. (7), *Salvia rosmarinus* Spenn. (5), *Pitosporum tobira* (Thunb.) W.T.Aiton (3). There are no climbing or ground cover plants within the area. The open and green areas are covered with grass.

In terms of social interaction, the park is actively used within the neighborhood, allowing for individual and group use. In terms of management, there is no management unit within the park.

Findings from the Post Occupancy Evaluation Survey

In order to verify the accuracy of the evaluation system and reduce the impact of factors and calculation errors on the evaluation results, a POE survey was conducted with users of the New City Park.

The survey questions were divided into three sections. In the first section, the gender distribution of participants in the survey was 60% male and 40% female, based on their socio-demographic characteristics. Participants were classified into four age groups: children (<18 years), young adults (18-40 years), middle-aged adults (41-65 years), and elderly adults (>65 years), with young adults comprising 60% of the sample. In addition, 45% of the survey participants were high school graduates, 30% were college graduates, 10% were elementary school graduates, 10% were postgraduate students, and 5% were middle school graduates. When looking at data related to participants' spatial behaviors (usage time, frequency of use, etc.), the purpose of using the space, and its shortcomings;

When activity and usage criteria are evaluated, early morning hours are not among the preferred times for park use. Working visitors spend time in the park between 17:00 and 22:00, while non-working individuals or retirees spend time between 12:00 and 17:00. When examining the frequency of park use, the most preferred options are once a week (35.71%) and at least three times a week (26.1%). According to the responses regarding the times visitors use the park, the evening (43.91%) and afternoon (41.48%) options were predominantly preferred.

Participants most frequently chose the park for walking and exercising (33.79%), using the children's play areas (33.52%), and chatting with friends (32.69%). According to the observation results, the most frequently used part of the park is the children's play areas. The findings also show that participants visit the park to spend time with their children. In this sense, the park also serves an important social function of strengthening family bonds. The large grassy areas in the park support the social environment for users.

The primary purpose of visitors' use is seating and relaxation areas, with a higher percentage visiting more than once a week. Among the reasons for visiting, the vast majority are seen to prefer proximity. Users reported that they preferred the park because of its greenery (41.21%) and variety of activities (31.32%). However, 40% of visitors who participated in the survey stated that basic needs (seating areas, fountains, etc.) were lacking. The remaining preference was for solutions related to bicycle use.

Urban open and green spaces are areas where residents can meet their basic needs, providing relaxation and stress relief, thereby supporting their mental and emotional well-being (Conway,

2000). According to studies conducted among park visitors, a significant relationship was found between park use and perceived health status, with frequent park users reporting better health than non-users. Additionally, visitor amenities such as restrooms, cafes, children's play areas, picnic areas, sports facilities, and dog-walking areas encourage park visits (Godbey et al., 1992; McCormack et al., 2010; Chen et al., 2018). Bahriny & Bell (2021), in their study identifying recreational preferences in different areas, emphasized that the vast majority of users prefer the areas for strolling, sightseeing, having fun, and spending quality time with family and friends.

In the assessment of transportation and accessibility criteria, it was determined that visitors found the roads within the park to be adequate (70%). It was determined that the users who participated in the survey came to the park with their friends (33,79%), families (32,42%), and alone. 75% of the participants walked to the park, while the rest arrived by private vehicle. In addition to the majority of users coming to the park on foot, the percentage of those arriving by private vehicle is also high. It was determined that users reached the park in less than 15 minutes. In a study conducted by Herzele & Wiedemann (2023), it was stated that the maximum accessibility distance to residential areas for green spaces should be a maximum of 150 meters for residential areas. Gupta et al. (2016) state that for access to open and green spaces, residential areas should be within a 0-5 minute walk, neighborhood park users should be within a 10-minute walk, and city park users should be within a 15-minute walk or more. It is observed that the park's location is easily accessible for assistance in any emergency situation (88.19%).

In terms of comfort and image criteria, users rated the park's image as good. The spatial design contributes to a sense of security by providing comfort and privacy, which leads to a positive perception of the park. In addition, users stated that they found the park safe but that maintenance and repairs were inadequate. Meanwhile, 25% of users stated that they were bothered by vehicle noise due to the park's proximity to the road.

In the evaluation of aesthetic and visual harmony criteria, users rated the park's aesthetic and visual harmony as sufficient. While users appear satisfied with the park based on their survey responses, the inadequacy of the urban furniture used in the park negatively impacts the park visually and users functionally. Schroeder (1991) states that natural environments with vegetation and water create a more relaxed and less stressful environment for participants when compared to urban landscapes without vegetation. Studies have demonstrated the positive impact of green spaces within cities on various aspects of human health. (Akpınar, 2017; Orban et al., 2017; Coldwell & Evans, 2018). These areas, which offer environmental, aesthetic, and recreational benefits to individuals, contribute to improved mental and physical health by reducing stress levels, enhancing social interaction, and increasing physical activity (Wolch et al., 2014; Jaung et al., 2020; He et al., 2022). A study by Kua & Sia (2017) shows that residents living in green environments report lower levels of fear, rudeness, and less aggressive behavior. All these emotional and psychological benefits contribute to human quality of life by positively influencing emotional experiences. Therefore, to enhance the overall appeal of urban parks and improve residents' psychological well-being, parks should focus on exploring cultural elements and developing natural landscapes.

In the evaluation of the social interaction criterion, participants rated the park's activity diversity and external perception as good in terms of socialization. Appropriate spatial designs can effectively stimulate users' sense of participation and belonging, thereby improving mental health and happiness (Shi et al., 2023). City parks must have activity areas that are easily

accessible to city residents, where they can feel safe and meet their basic needs, and they must reflect the cultural characteristics of the city. In park design and management, participants have emphasized the importance of regular maintenance and repair of the facilities and elements within the park.

AHP_TOPSIS Analysis

The AHP method was used to calculate the criterion weights determined by experts according to the multi-criteria decision-making method based on AHP-TOPSIS methods. To reveal preferences for the criteria, a survey was conducted based on the Evaluation Indicator System, comparing six criteria in pairs, according to the evaluations of 10 experts and academics from Süleyman Demirel University, Isparta University of Applied Sciences, and other institutions. (Landscape architect, Urban planner, Architect, Environmental engineer, and Local administrators) Experts were selected based on their field expertise; during the evaluation process, the consistency ratio of individual AHP matrices was kept below 10%. To ensure evaluator agreement among expert opinions, group decisions were combined using the geometric mean method. The participant profile was diversified to ensure a multifaceted perspective. The experts' judgments were weighted and averaged to create an evaluation matrix (Table 2).

Table 2. Evaluation Matrix

Criteria	K1	K2	K3	K4	K5	K6
K1	1	5,00	0,25	0,33	0,50	5,00
K2	0,20	1	0,20	0,14	0,33	0,20
K3	4,00	5,00	1	1,00	3,00	4,00
K4	3,00	7,00	1,00	1	3,00	4,00
K5	2,00	3,00	0,33	0,33	1	3,00
K6	0,20	5,00	0,25	0,25	0,33	1

In determining the percentage importance distribution of the factors, the relative importance of the criteria was calculated after creating a pairwise comparison matrix, and an A matrix was created. The normalized W_i column vector belonging to the created A matrix was obtained. The importance weights of the criteria were calculated as 0.300, 0.222, 0.180, 0.163, 0.086, and 0.049 (Table 3).

Table 3. Importance Weights of the Criteria

Criteria	Importance Weight of the Criteria	
K1	Activity and Usage	0,180
K2	Transportation and Access	0,049
K3	Comfort and Image	0,300
K4	Aesthetic and Visual Harmony	0,222
K5	Social Interaction	0,163
K6	Management	0,086

Measuring Consistency in Factor Comparisons

Although AHP is a consistent method in itself, the consistency and realism of the results depend on the consistency and realism of the comparisons made by experts between the criteria (Ersoy,

2021). The AHP method calculated the “Consistency Ratio (CR)” as $CR = 0.08$ after the pairwise comparisons of the evaluated criteria. The results of the matrix evaluation weights are consistent and valid.

As a result of the operations applied in the AHP process, the criteria used in the TOPSIS process were weighted. After this stage, the criteria were ranked using the TOPSIS method.

Ranking of Alternatives

The first 4 steps of the AHP process were applied in determining the importance weights of the criteria identified by the experts (Table 4). The 6 steps of the TOPSIS process were carried out to determine the ranking of the criteria.

Table 4. Importance Weights of the Criteria Identified by the Experts

Criteria	Sub-criteria	Local weight
Activity and Usage	• The park offering different activity opportunities	0,180
	• Use of activities by different user groups	
	• Making the area attractive to visit at different times of the day and year	
	• Increasing the length of stay in the park	
	• The physical design and layout of the park encouraging use throughout the night	
	• Frequency of users coming to the park (number of visitors)	
Transportation and Access	• Location of the park	0,049
	• Ease of visibility and perception of the park from the outside	
	• Openness of entry and exit points	
	• Access to the park	
	• Adequacy of roads within the park	
	• Connection to surrounding units (buildings, streets, boulevards, etc.)	
	• Availability of public transportation systems that provide adequate access to the park	
	• Availability of bicycle paths	
	• Access time to the park	
	• Adequacy of parking areas	
	• Adequacy of signage and information within the park	
	• Suitability of spatial accessibility for use by persons with disabilities	
Comfort and Image	• Comfort of the park	0,300
	• Good image of the park	
	• Reflection of local identity in the park	
	• Number and adequacy of urban fixtures and elements	
	• Adequacy of seating and resting areas	
	• Existence and adequacy of infrastructure systems	
Aesthetic and Visual Harmony	• Existence of lighting elements	0,222
	• Sufficient plant species and diversity	
	• Compatibility of plant and structural diversity with the environment	
	• Park design compliance with measurements and standards	
	• Presence of attractive and impressive areas	
	• Interaction and integrity between different spaces and their uses	
• The presence of water elements		

	<ul style="list-style-type: none"> • The consideration of design elements and principles (color, texture, line, scale) in plant compositions • The use of plant species according to aesthetic and functional purposes • The aesthetic and functional use of furnishing elements 	
Social Interaction	<ul style="list-style-type: none"> • Adequacy of social areas • Organization of social and cultural events • Users' acceptance and ownership of the park • Suitability of the park for use by individuals of all ages • Ensuring the presence of different user groups (families, friends, etc.) 	0,163
Management	<ul style="list-style-type: none"> • No security issues • Management presence and security points within the park • Adequacy of maintenance and repairs • User satisfaction 	0,086

Creating the Decision Matrix

The first step in the TOPSIS decision-making process is to create the decision matrix. In this step, the A matrix (R_{ij}) created in the experts' evaluation is the primary matrix (Table 5).

Table 5. Creating the Decision Matrix

0,180	0,049	0,300	0,222	0,163	0,086
1,00	5,00	0,25	0,33	0,50	5,00
0,20	1,00	0,20	0,14	0,33	0,20
4,00	5,00	1,00	1,00	3,00	4,00
3,00	7,00	1,00	1,00	3,00	4,00
2,00	3,00	0,33	0,33	1,00	3,00
0,20	5,00	0,25	0,25	0,33	1,00

After creating the decision matrix, the weight values (w_i) related to the evaluation factors are determined. The sum of the determined weight values must be Eqs. (1). Using the weights of the evaluation indicators obtained with the AHP method, the weighted decision matrix (V_{ij}) was created. Eqs. (2)

Creation of Ideal and Negative Ideal Solutions

In order to create the ideal solution set, ideal and negative ideal solutions were determined based on the weighted evaluation factors in the V_{ij} matrix. Eqs. (3)-(4)

$$A^+ = \{(0,720; 0,343; 0,300; 0,222; 0,489; 0,430)\}$$

$$A^- = \{(0,036; 0,049; 0,060; 0,031; 0,054; 0,017)\}$$

Calculation of Discrimination Measures and Proximity to the Ideal Solution

Ideal and negative ideal discrimination measures are used to calculate the proximity of each decision point to the ideal solution (C_i) (Table 6). Eqs. (5)-(6)

Table 6. Calculation of Proximity to the Ideal Solution

S*	S-	C _i	
0,734	0,478	0,394	4
1,003	0,000	0,001	6
0,130	0,944	0,878	1
0,197	0,853	0,812	2
0,604	0,531	0,468	3
0,928	0,204	0,180	5

Table 6 shows the rank values for each criterion: Comfort and image (0.878), aesthetic and visual harmony (0.812), social interaction (0.468), activity and use (0.394), management (0.180), and finally accessibility. Based on the weights assigned to these criteria, “comfort and image” significantly affects park quality in cities.

The most important criterion, comfort and image, includes not only the comfort of the park but also elements such as safety, seating and resting facilities, and the reflection of local identity. Therefore, park planning and design efforts in cities should prioritize improving park layout and structure and integrating fundamental factors such as multi-functional spaces (Woollett & Maguire, 2010; Grazuleviciene et al., 2014). Consequently, park design and recreational opportunities should be enhanced to improve overall usage quality

The landscape quality assessment of New City Park reveals that comfort and image, the most important criteria, necessitate addressing the park's shortcomings, resolving existing issues, and promoting quality improvement. The park design and vegetation contribute to visitors' physical, psychological, and social well-being by showcasing good visual quality. Its spatial form contributes to a sense of security by providing comfort and privacy, leading to a positive perception of the park. Careful planning of structural and vegetative areas within the park, appropriate site selection, and regular maintenance have a positive impact on shaping this parameter. On the other hand, improvements are needed due to the inadequacy of fixtures and elements in the landscape quality assessment. Parks with good landscape quality should focus on strengthening and developing their existing strengths, discovering their distinctive features, and further enhancing the landscape quality of urban parks (Jiang et al., 2022). In maintenance and repair activities, the repair or renewal of park fixtures and equipment, the regular removal of waste and debris, and the regular periodic maintenance of plant landscaping areas are required (Wang et al., 2023). Spatial improvements should encourage social interaction by fostering a sense of belonging. Furthermore, emphasizing the integration of historical and cultural elements will be beneficial in enhancing the park's uniqueness and appeal.

CONCLUSIONS

There is a growing need in Türkiye to improve the spatial quality of life in urban settlements, strengthen the economic and social structure, and restructure the spatial planning system. In this context, based on this need, the preparation of an “Urban Development Strategy and Action Plan” was envisaged in the “Medium-Term Programme” for the years 2010-2012. The focus of the Strategy and Action Plan is to determine policies and activities aimed at solving legal, technical, and administrative problems in the creation of healthy, balanced, and safe cities. The “Integrated Urban Development Strategy and Action Plan,” abbreviated as Urban Development Strategy (KENTGES), covers the areas, themes, and dimensions of settlement and urbanization, as well as settlement and spatial planning within the framework of the

principle of sustainability, relates sectors related to space in an integrated approach, and ensures compliance with fundamental national policies. Considering the leading role of cities in socio-economic development and their functions in spatial organization and inter-settlement relations, urban development emerges as a fundamental element in the context of regional development.

The quality of buildings and life in our cities, as well as issues related to identity, preservation, capacity, participation, aesthetics, and spatial design, require solutions that simultaneously implement top-down and bottom-up planning mechanisms. To this end, the 'Urban Strategy Framework' should include forecasts, strategic priorities, and requirements regarding how the urban form will develop within the framework of a new urban vision, covering spatial components at the island, neighborhood, and city scales. Considering the problems cities face today, the "Urban Strategy Framework" should be brought to the agenda as a strategic spatial planning approach, and "Strategic Design Management" as a process management approach.

Municipalities that group activities related to open and green spaces under the heading of 'environmental management' do not appear to have strategies for green space planning. Administrations that define their area of activity as 'green space management' have put forward a relatively more qualified management strategy. However, an integrated green space management system within urban policies has not been included in any strategic plan other than the Izmir Metropolitan Municipality Strategic Plan. There are problems in the implementation of the defined green space management strategies due to the division of labor within the organizational structure. The study focuses on neighborhood parks, which are an important part of open and green space systems that enhance quality of life and play a significant role in identity formation alongside socialization, and on user experiences that reveal user satisfaction.

This study was conducted at the New City Park, located in the Çünür neighborhood of Isparta province, which opened in 2023. The scientific value of the study was sought by comparing the data obtained from literature reviews with the findings from fieldwork. The assessments presented for the New City Park in terms of landscape planning and design were interpreted in terms of user satisfaction, and their contributions to public welfare and quality of life were examined. To this end, the defined methodological stages were formed from interrelated processes. In addition to the information obtained from the first stage of these processes, which was domestic and international literature reviews, results regarding the post-use experiences of people using New City Park were obtained using the AHP-TOPSIS analysis and, in another stage, the POE analysis, along with a field survey method using standard forms, in order to determine the role of public open and green spaces in the well-being and quality of life of their users. The results obtained from evaluations of user satisfaction and needs regarding the use of the park are important for urban management strategies that will generate data for the "Urban Development Framework" and "Strategic Design Management."

In general, assessing the quality of public park usage enables a more detailed understanding of each park's strengths and weaknesses, thereby facilitating guidance and recommendations for improving the landscape quality of parks in cities in future planning efforts. The analytical findings indicate that New City Park needs improvement in terms of landscape quality. When planning, designing, or renovating these areas, it is crucial to consider not only the necessary criteria involved in the design, planning, and management stages but also the expectations, desires, and opinions of park users.

By providing a scientific basis for the planning and design of parks in cities, it is possible to contribute to the development of the urban green space system. The findings of the study show that the criteria of “comfort and image,” “aesthetic and visual harmony,” and “social interaction” carry greater weight in studies that reveal the quality of city parks. In this regard, to meet various usage needs:

- Creating spaces suitable for different age groups (such as children's play areas and fitness areas for the elderly),
- Creating opportunities for entertainment and social interaction in parks,
- Providing users with psychological security and a sense of belonging to the area,
- Offering interactive designs for walking paths,
- Optimizing the balance between privacy and openness in parks with plants and appropriately increasing sheltered areas by taking advantage of the natural environment are important indicators for natural perception and spatial perception in park use.

Zhou et al. (2023) study shows that urban parks should further increase residents' psychological satisfaction by optimizing their diversified activity areas and reducing functional complexity. Plant species and diversity are important in the design and use of plants that guide users in experiencing park activities and enhancing their psychological perception effects. Plants used in parks are effective in increasing visual perception richness with the landscape views they offer in different seasons and the ecological functions of open and green spaces.

It has been observed that the most important reason for users of New City Park to visit the park is to spend time with their family members and unwind from the week's fatigue without straying too far from their surroundings. The desire to spend time immersed in nature, which is a common theme in many studies, represents the greatest challenge in balancing supply and demand within urban park systems. It is known that areas with strong cultural and natural appeal play an important role in enhancing users' aesthetic enjoyment and sense of belonging when evaluating the quality of parks in cities. Furthermore, multifunctional areas that combine sports, education, and entertainment in urban open and green spaces, satisfy individual activities, and are conducive to social interaction are considered important for promoting the diversity and comprehensiveness of park areas.

Based on the surveys and observations conducted in this study, New City Park is characterized as a high-quality park that can adapt to changing needs, offers a variety of activities, and promotes social interaction and design. The closer a particular urban park is to the positive ideal solution, the higher the landscape quality it exhibits as it approaches the ideal solution. To increase the generalizability of findings in future research, it is recommended that the scope of the study be expanded to include more urban parks in different geographic regions and encompass various park types and scales.

AUTHOR CONTRIBUTIONS

Only one Author contributed to this study.

FUNDING STATEMENT

The authors received no specific funding for this work.

CONFLICT OF INTEREST STATEMENT

The author declares no conflict of interest.

ETHICS COMMITTEE APPROVAL

Ethics committee approval was obtained for his study with the number of E.208133 and the application date of 08.08.2025. The application was approved by the author's institution, Isparta University of Applied Sciences.

REFERENCES

- Akad, S. & Çubukcu, E. (2006). Kentsel açık alanlarda kullanım sonrası değerlendirme: İzmir sahil bantları örneği üzerine ampirik bir araştırma. *Planlama*, 3, 105-115.
- Akpinar, A. (2017). Urban green spaces for children: a cross-sectional study of associations with distance, physical activity, screen time, general health, and overweight. *Urban Forestry Urban Greening*, 25, 66–73. <https://doi.org/10.1016/j.ufug.2017.05.006>.
- Akten, M. (2013) Possibility to employ AHP as a multi-criteria decision making method in landscape planning initiatives. In *Advances in Landscape Architecture*; IntechOpen: London, UK.
- Akten, M. & Sunar, C. (2022) Tarihi çevrelerin kentsel mekan kalitesi üzerine etkisi: Gaziantep Bey Mahallesi örneği. *Turkish Journal of Forest Science*, 6(1), 1-20. <https://doi.org/10.32328/turkjforsci.976701>
- Akten, S., & Yücedağ, C. (2022). Isparta Çünür Mahallesi park ve konut bahçelerinin peyzaj tasarımı açısından incelenmesi. *Artvin Çoruh Üniversitesi Orman Fakültesi Dergisi*, 23(1), 51-64. <https://doi.org/10.17474/artvinofd.1058787>
- Alp, M.A. (2025). Kullanım sonrası değerlendirme: Turnasuyu Kordon Park'ta (Ordu/Gülyalı) kullanıcı deneyimleri ve iyileştirme önerileri. *Artvin Çoruh Üniversitesi Orman Fakültesi Dergisi*, 26(1), 104-114. <https://doi.org/10.32328/turkjforsci.976701>
- Atabek, E. (2002). *Kamusal mekanlarda kalite: Yıldız Teknik Üniversitesi Kampüsü'nde kullanıcı görüşlerine dayalı kalite değerlendirilmesi*. Yüksek Lisans Tezi, İstanbul Teknik Üniversitesi, İstanbul, Türkiye.
- Bahriny, F., & Bell, S. (2021). Traditional versus modern? Perceptions and preferences of urban park users in Iran. *Sustainability*, 13(4), 2036. <https://doi.org/10.3390/su13042036>.
- Baljon, L. (1992). *Designing parks: An examination of contemporary approaches to design in landscape architecture, based on a comparative design analysis of entries for the Concours International: Parc de la Villette, Paris, 1982-83*. Wageningen University and Research. Wageningen, The Netherlands.
- Başalma, D.E., Uslu, A. & Şahin Körmeçli, P. (2019). Kent parkı kalite göstergelerinin değerlendirilmesi kapsamında bir deneme: Ankara 100. Yıl Birlik Parkı örneği. *Uluslararası Peyzaj Mimarlığı Araştırmaları Dergisi*, 1(1), 08-13.

- Bayram, B. (2007). *Kamusal mekan kalitesinin yükseltilmesinde yöntemler ve kamusal sanatın rolü*. Yüksek Lisans Tezi, İstanbul Teknik Üniversitesi, İstanbul, Türkiye.
- Beyli, K.N. & Yeşil, M. (2019). Mahalle parkları özelinde kalite kriterleri ile kullanım potansiyeli arasındaki ilişkinin irdelenmesi. *Ordu Üniversitesi Sosyal Bilimler Araştırmaları Dergisi*, 9(3), 485-497.
- Chen, Y., Liu, X., Gao, W., Wang, R.Y., Li, Y., & Tu, W. (2018). Emerging social media data on measuring urban park use and their relationship with surrounding areas. A case study of Shenzhen. *Urban Forestry & Urban Greening*, 31,130-141. <https://doi.org/10.1016/j.ufug.2018.02.005>
- Coldwell, D.F., & Evans, K.L. (2018). Visits to urban green-space and the countryside associate with different components of mental well-being and are better predictors than perceived or actual local urbanisation intensity. *Landscape and Urban Planning*, 175, 114-122. <https://doi.org/10.1016/j.landurbplan.2018.02.007>
- Conway, H. (2000.) Parks and people the social functions. In Woudstra, J., Fieldhouse, K. (Eds.) *The regeneration of public parks*. (196 pp.), Taylor & Francis, London.
- Dade, M.C., Mitchell, M.G.E., Brown, G., & Rhodes, J.R. (2020). The effects of urban greenspace characteristics and socio-demographics vary among cultural ecosystem services. *Urban Forestry & Urban Greening*, 49, 126641. <https://doi.org/10.1016/j.ufug.2020.126641>.
- Emür, S. & Onsekiz, D. (2007). Kentsel yaşam kalitesi bileşenleri arasında açık ve yeşil alanların önemi: Kayseri/Kocasinan İlçesi park alanları analizi. *Sosyal Bilimler Enstitüsü Dergisi*, 22, 367-396.
- Ersoy, Y. (2021). Supplier selection in food industry using analytic hierarchy process (AHP) method. In Bayar Y. (Ed.). *Handbook of research on institutional, economic and social impacts of globalization and liberalization*. IGI Global Publishing, (pp. 657-670), USA. <https://doi.org/10.4018/978-1-7998-4459-4.ch036>
- Fan, P., Xu, L., Yue, W., & Chen, J. (2017). Accessibility of public urban green space in an urban periphery: the case of Shanghai. *Landscape and Urban Planning*, 165(4), 177-192. <https://doi.org/10.1016/j.landurbplan.2016.11.007>.
- Fischler, R. (2000). *Planning for social betterment: from standart of living to quality of life, urban planning in a changing World*. The Twentieth-Century Experience, (183 pp.), London.
- Gai, S.J., Fu, J.M., Rong, X., & Dai, L.L. (2022). Users' views on cultural ecosystem services of urban parks: An importance-performance analysis of a case in Beijing, China. *Anthropocene*, 37(1), 100323. <https://doi.org/10.1016/j.ancene.2022.100323>.
- Gehl, J. (1987). *Life between buildings: Using public spaces*. New York: Van Nostrand Reinhold.Island Press, (211 pp.), London.
- Godbey, G., Graefe, A., & James, S.W. (1992). *The benefits of local recreation and parkservices: A nationwide study of the perceptions of the American public*. Washington D.C. National Recreation and Park Association, USA.
- Grazuleviciene, R., Dedele, A., Danileviciute, A., Vencloviene, J., Grazulevicius, T., Andrusaityte, S., Uzdanaviciute, I. & Nieuwenhuijsen, M. (2014). The influence of proximity to city parks on blood pressure in early pregnancy. *International Journal of Environmental Research and Public Health*, 11(3), 2958-2972. <https://doi.org/10.3390/ijerph110302958>
- Gupta, K., Roy, A., Luthra, K., Maithani, S., Mahavir. (2016). GIS based analysis for assessing the accessibility at hierarchical levels of urban green spaces. *Urban Forestry & Urban Greeing*, 18, 198-211. <https://doi.org/10.1016/j.ufug.2016.06.005>

- He, D., Miao, J., Lu, Y., Song, Y., Chen, L., & Liu, Y. (2022). Urban greenery mitigates the negative effect of urban density on older adults' life satisfaction: Evidence from Shanghai, China. *Cities*, 124, 103607. <https://doi.org/10.1016/j.cities.2022.103607>
- Herzele, V.A., & Wiedemann, T. (2023). A monitoring tool for the provision of accessible and attractive urban green spaces. *Landscape and Urban Planning*, 63, 109-126. [https://doi.org/10.1016/S0169-2046\(02\)00192-5](https://doi.org/10.1016/S0169-2046(02)00192-5)
- Huai, S.Y., & Voorde, T.V.D. (2022). Which environmental features contribute to positive and negative perceptions of urban parks? A cross-cultural comparison using online reviews and natural language processing methods. *Landscape and Urban Planning*, 218, 104307. <https://doi.org/10.1016/j.landurbplan.2021.104307>.
- Huang, C., Yang, J., Lu, H., Huang, H., & Yu, L. (2017). Green spaces as an indicator of urban health: Evaluating its changes in 28 mega-cities. *Remote Sensing*, 9(12), 1266. <https://doi.org/10.3390/rs9121266>
- Jaung, W., Carrasco, L.R., Shaikh, S.F.E.A., Tan, P.Y., Richards, D.R. (2020). Temperature and air pollution reductions by urban green spaces are highly valued in a tropical city-state. *Urban Forestry Urban Greening*, 55(1), 126827. <https://doi.org/10.1016/j.ufug.2020.126827>.
- Jiang, Q. Z., Wang, G. X., Ling, X. Y., & Liu, N. (2022). Research on the perception of cultural ecosystem services in urban parks via analyses of online comment data. *Landscape Architecture Frontiers*, 10(5), 32-51. <https://doi.org/10.15302/J-LAF-1-020072>
- Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. Cambridge University Press, Cambridge, UK.
- Karakaya, N., & Taşlı, T.C. (2019). Yaşam kalitesinin artırılmasında kent parklarının önemi: Eskişehir örneği. *Uluslararası Toplum Araştırmaları Dergisi*, 14(20), 1259-1283, <https://doi.org/10.26466/opus.590962>.
- Kılbaş, E.P., & Cevahir, F. (2023). Bilimsel araştırmalarda örneklem seçimi ve güç analizi. *Journal of Biotechnology and Strategic Health Research*, 7(1), 1-8. <https://doi.org/10.34084/bshr.1217279>
- Kua, E.H., & Sia, A. (2017). Green environment and mental health in the city. *Mental Health and Illness Worldwide*, 445-464. https://doi.org/10.1007/978-981-10-0752-1_2-1
- Liu, Q., Wang, X., Liu, J., Zhang, G., An, C., Liu, Y., Fan, X., Hu, Y., & Zhang, H. (2021). The relationship between the restorative perception of the environment and the physiological and psychological effects of different types of forests on university students. *International Journal Environmental Research and Public Health*, 18(22), 2224. <https://doi.org/10.3390/ijerph182212224>.
- Madden, K. (2001). How to turn a place around, a handbook for creating successful public spaces. In Schwartez, A. (Ed.) *Project for Public Spaces*. New York.
- McCormack, G.R., Rock, M., Toohey, A.M., & Hignell, D. (2010). Characteristics of urban parks associated with park use and physical activity: A review of qualitative research. *Health & Place*, 16(4), 712-726. <https://doi.org/10.1016/j.healthplace.2010.03.003>
- Orban, E., Sutcliffe, R., Dragano, N., Joeckel, K.H., & Moebus, S. (2017). Residential surrounding greenness, self-rated health and interrelations with aspects of neighborhood environment and social relations. *Journal of Urban Health Bulletin*, 94(2), 158-169. <https://doi.org/10.1007/s11524-016-0112-3>.
- Öztürk, S.M. & Temel, S.C. (2019). Kent parklarda kalite kriterlerinin değerlendirilmesi: Karabük Kordon Park örneği. *Kent Kültürü ve Yönetimi Hakemli Elektronik Dergisi*, 12(4), 752-764. <https://doi.org/10.35674/kent.616808>
- Polat, A.T. (2012). Kent parklarında görsel kalite ve doğallık derecesi arasındaki ilişkilerin belirlenmesi. *Journal of the Institute of Science and Technology*, 2(3), 85-92.

- Prakash, C., & Barua, MK. (2015). Integration of AHP-TOPSIS method for prioritizing the solutions of reverse logistics adoption to overcome its barriers under fuzzy environment. *Journal of Manufacturing Systems*, 37(3), 599-615. <https://doi.org/10.1016/j.jmsy.2015.03.001>
- Project for Public Spaces (PPS), (2000). *How to turn a place around: A handbook for creating successful public spaces*. Project for Public Spaces, Inc., ISBN: 0-70624- 0- 1, (121 pp.), New York.
- Saaty, T. (1980). *The analytic hierarchy process*. (1th ed.). New York: McGraw Hill.
- Saaty, T.L. (2000). *Fundamentals of decision making and priority theory with the analytic hierarchy process*. (6th ed.). Rws Publications, Pittsburgh.
- Schroeder, H.W. (1991). Environment, behavior and design research on urban forests. In *Advances in environment, behavior, and design*. Plenum, (pp. 87-117), New York.
- Shi, W.W., Mahdzar, S.S.S., & Li, W.C. (2023). Park inclusive design index as a systematic evaluation framework to improve inclusive urban park uses: the case of Hangzhou urban parks. *Applied Sciences*, 13(23),12954. <https://doi.org/10.3390/app132312954>
- Talay, İ., Kaya, F., & Belkayalı, N. (2010). Sosyo-ekonomik yapının rekreasyonel eğilim ve talepler üzerine etkisi: Bartın kenti örneği. *Coğrafi Bilimler Dergisi*, 8(2), 147-156.
- Ter, Ü. (2011). Quality criteria of urban parks: The case of Alaaddin Hill (Konya-Turkey), *African Journal of Agricultural Research*, 6(23), 5367-5376. <https://doi.org/10.5897/AJAR11.016>
- Thompson, C.W, Aspinall, P., Roe, J., Robertson, L., & Miller, D. (2016). Mitigating stress and supporting health in deprived urban communities: The importance of green space and the social environment. *International Journal of Environmental Research and Public Health*, 13(4), 440. <https://doi.org/10.3390/ijerph13040440>
- Topçu, G.Z., Bayır, K., Cavıldak, Z.E., Başeğmez, M., & Aydın, C.C. (2023). Yeşil alan uygunluk analizinin CBS tabanlı AHP ve TOPSİS yöntemleriyle değerlendirilmesi. *Geomatik*, 8(3), 235-249. <https://doi.org/10.29128/geomatik.1171069>
- TUİK, Türkiye İstatistik Kurumu (2024). <https://www.tuik.gov.tr/> Accessed 25.07. 2025
- Ulrich, R.S. (1981). Natural versus urban scenes: Some psychophysiological effects. *Environment and Behavior*, 13(5), 523–556.
- Wang, D., Brown, G., Liu, Y., & Mateo-Babiano, I. (2015). A comparison of perceived and geographic access to predict urban park use. *Cities*, 42(A), 85-96. <https://doi.org/10.1016/j.cities.2014.10.003>
- Wang, S., Duan, W., & Zheng, X. (2023). Post-occupancy evaluation of brownfield reuse based on sustainable development: The case of Beijing Shougang Park. *Buildings*, 13(9), 2275. <https://doi.org/10.3390/buildings13092275>
- Wolch, J.R., Byrne, J., & Newell, J.P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities “just green enough”. *Landscape and Urban Planning*, 125, 234-244. <https://doi.org/10.1016/j.landurbplan.2014.01.017>
- Woollett, K., & Maguire, E.A. (2010). The effect of navigational expertise on wayfinding in new environments. *Journal of Environmental Psychology*, 30(4), 565-573. <https://doi.org/10.1016/j.jenvp.2010.03.003>
- Yücel, G.F., & Yıldızcı, A.C. (2006). Kent parkları ile ilgili kalite kriterlerinin oluşturulması. *İTÜ Dergisi /a*, 5(2), 222-232.
- Zeisel, J. (1995). *Inquiry by design. Tools for environment-behavior research*. Cambridge University Press, Cambridge.
- Zhai, Y.J. (2016). Landscape architecture planning and design strategy based on environmental psychology-natural environment preference theory as an example. In *Proceedings of the 2016 annual meeting of the Chinese Society of Landscape Architecture*. (15-17 April 2016), Changsha, China.

- Zhu, Z., Li, J., & Chen, Z. (2023). Green space equity: Spatial distribution of urban green spaces and correlation with urbanization in Xiamen, China. *Environment Development and Sustainability*, 25 (1), 423-443. <https://doi.org/10.1007/s10668-021-02061-0>
- Zhou, X.C., Cen, Q.Y., & Qiu, H.F. (2023). Effects of urban waterfront park landscape elements on visual behavior and public preference: evidence from eyetracking experiments. *Urban Forestry and Urban Greening*, 82(2),127889. <https://doi.org/10.1016/j.ufug.2023.127889>