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Understanding the visitor complaints about urban green spaces: a thematic investigation of online reviews on nation gardens in Istanbul, Türkiye

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Urban Green Spaces have become essential tools for promoting public health, especially in over-urbanized cities. Following visitors' outdoor recreation experiences, this paper aims to identify visitors' complaints about nation gardens in Istanbul. The study site consisted of 12 nation gardens in Istanbul. Initially, 38,965 Google Maps reviews about the nation gardens through December 2022 were screened. Then, 4143 comments containing the visitors' complaints were identified. After gathering these comments in an Excel spreadsheet, the data was imported to MAXQDA software. Braun and Clarke's six-phased thematic analysis approach was applied to explore codes and themes. Considering the visitors' complaints, 91 codes were generated. Relevant codes are categorized under five themes: outdoor areas/physical characteristics, facilities, visitors' interactions, accessibility/entrance management, and restrictions and security implications. Outdoor areas/physical characteristics, facilities, and visitor interactions are the most common complaints, followed by accessibility and security. Park planners can use visitor feedback to improve existing parks and design new ones, maximizing individual and social benefits, such as health outcomes, and ensuring the effective use of green spaces.

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Introduction

Urbanization, the transformation of rural populations into urban areas (Gong et al. 2012), has led to environmental issues such as air, soil, water, light, and noise pollution. These issues negatively impact the sustainability of cities and human well-being. Urban life also causes physical diseases and chronic stress, leading to diseases and cancer (Kim and Jin 2018). Urbanized citizens expect a high quality of life, including good public health, an unpolluted environment, good food, safe drinking water, and recreational opportunities in green spaces (Botkin and Beveridge 1997). A liveable city must have green spaces to provide healthier surroundings and various benefits to urban dwellers. Studies show that living close to urban green spaces (UGS) leads to increased happiness and health, as they provide an ideal setting for unwinding from daily stress (Addas, 2023). Urban planning and design face the challenge of meeting residents' expectations, and UGS such as parks, gardens, plazas, and trees are essential in addressing this (Reyes-Riveros et al. 2021). These areas offer comfortable living environments (Takano et al. 2002), physical and emotional benefits (Grahn and Stigsdotter 2010), and a positive association with perceived general health (Maas et al. 2006). Research conducted in metropolitan cities like New York (Sutton and Anderson 2016), Singapore (Henderson 2013), Tokyo (Kohsaka and Okumura 2014) and Delhi (Paul and Nagendra 2017) highlights the importance of green spaces in regulating urban health, supporting biodiversity, and enhancing livelihood opportunities.

Public health indicators primarily focus on physical health, including stress, obesity, respiratory diseases, mortality, and life expectancy. UGS is crucial for physical activity and urban health protection (Wolch et al. 2014). Green spaces have positive effects on mortality, CVD morbidity, cardiometabolic factors, mental health, low birth weight, physical activity, sleep quality, and urban crime (Yang et al. 2021). Since the 1990s, there has been a rapid increase in public health and green space studies, with interdisciplinary categories emerging (Zhang et al. 2020). However, studies on social health are sparse, despite the growing prominence of environmental disciplines.

Urban planners, park administrators, and public health professionals can use green spaces to promote health equity (Rigolon et al. 2021), but access to these spaces is often stratified based on income, ethnic-racial characteristics, age, gender, and disability. Research has shown links between green space accessibility indicators and positive health effects, such as a significant relation between the percentage of green space within a one-kilometer and three-kilometer radius and a protective effect against anxiety/mood disorder treatment counts (Maas et al. 2006). Understanding these factors is crucial for achieving equality in urban spaces (Nutsford et al. 2013).

Policymakers and researchers are working to address access issues in UGS to ensure environmental justice, public health, and physical activity. Three parameters of UGS development policies have been identified: proximity, park acres, and quality (Rigolon 2016). Proximity refers to a geographic unit's distance to the nearest parks (Talen 2010), while park acres refer to the number or size of green space and recreational facilities that increase the total size of the UGS (Sister et al. 2010). Quality encompasses the qualities, features, and fitness for purpose that impact how the populace uses and interacts with the UGS (Knobel et al. 2021), aiming to improve the quality of UGS through improved service and maintenance levels (Rutt and Gulsrud 2016).

UGS management and planning in high-density urban areas require accurate information about these areas. Visitor perceptions are a common method used to measure UGS quality, which is crucial for effective management (Baur et al. 2016). However, visitor perception of surrounding UGS is subjective and varies from person to person (Langemeyer et al. 2015), influenced by factors like personality, location, socio-economic profile, scene composition, and complexity (Chen et al. 2009). As a result, understanding the advantages and objective qualities of UGS is difficult, making it difficult to interpret perceptual data on UGS (Kothencz and Blaschke 2017).

Although a lot of studies have focused on many issues related to visitor perceptions (Basu and Nagendra 2021; Chen et al. 2009; Font et al. 2021; Kothencz and Blaschke, 2017; Paul and Nagendra, 2017; Rupprecht et al. 2015) of UGS, studies on visitor complaints are limited (Delshammar et al. 2015). The handling of customer and visitor complaints can significantly impact satisfaction and loyalty levels, indicating the importance of evaluating organizational performance (Calin 2012). Organizations can address complaints effectively by finding effective solutions and taking corrective action if necessary. Management should also prepare for positive feedback to boost visitor numbers (Fang et al. 2016). Satisfaction can transform dissatisfied customers into satisfied and loyal ones, leading to revisiting, highlighting superior features, positive word-of-mouth, recommendations, and longer stays, particularly in UGS (Çevik 2020). A satisfied park visitor is thought to increase the frequency of UGS visits and the time spent in these areas. In this context, the increase in the use of UGS in communities can make positive contributions to both individual and public health.

Despite being the most densely populated metropolis in Türkiye, Istanbul has far less green space per person (7.6 m2) (İBBF 2019) than the minimum level (9 m2) that the World Health Organization (2012) recommends for healthy cities. Under these circumstances, it is even more crucial to conduct research for a more effective and efficient use of the city's green spaces. As a result, it will be possible to help design public policies that will increase the health and well-being of UGS visitors by revealing the complaints of UGS visitors about these areas. Therefore, aiming to explore the visitors' complaints about the UGS in Istanbul, the research question of this study is "Which aspects of the nation gardens in Istanbul do visitors complain about?"

Methodology

Research context and data collection. According to the Republic of Türkiye Ministry of Environment, Urbanization and Climate Change (2022), Istanbul has 12 completed nation gardens projects, which aim to increase green space and meet recreational demands. Using Google Maps reviews as the primary source of data, the study focused on analyzing visitor complaints regarding these 12 nation gardens. Compared to surveys and interviews, online reviews offer a novel and efficient method for investigating visitors' perspectives (Ye et al. 2014). Further, research shows that 63.6% of internet users are likely to check Google Reviews before deciding to visit a particular destination, which makes Google the leading review site (Review Tracker 2022). This implies that Google Maps user reviews can be a valuable data source to explore visitors' perceptions of the nation gardens.

Google Maps allows users to control who sees their public contributions, including reviews, photos, and ratings, which are automatically found on their profile and can be restricted by updating profile settings (Google Maps 2024a). It also enables users to view and edit their public profile, which includes the ability to change their Google name, profile photo, add a short bio, manage account settings and privacy controls, find past contributions and posts, and review topic stats (Google Maps 2024b). In adherence to Google Maps' privacy policy and terms of service, the publicly available data was utilized for this study. Nevertheless, user names and locations were not revealed, prioritizing ethical considerations, including user privacy and anonymity.

Data screening and selection criteria. A comprehensive dataset comprising 38,965 Google Maps user reviews was initially screened to identify visitor complaints about the 12 nation gardens in Istanbul. Then, to ensure the relevance and precision of the reviews, the following exclusion criteria were implemented:

(1) Reviews containing questions only (e.g., *"What time does it close?"*);

(2) Positive reviews (e.g., *"One of the most beautiful scenery in Istanbul!"*);

(3) Neutral reviews (e.g., *"Barbecues and samovars are prohibited."*);

(4) Non-specific visitor complaints; (e.g., *"I gave one star because I wanted to."*);

(5) Rating-only reviews.

Reviews with five-star ratings were not excluded a priori, as some discrepancies between certain reviews and corresponding ratings were noticed. For instance, a visitor, despite giving a five-star rating, stated *"Nice service but no maintenance! Most playground equipment is broken and not repaired. There is a security but it's not active."* Similarly, another visitor giving a five-star rating stated *"I gave it five stars to stand out, but this place is worthless."* Given such discrepancies, all visitor reviews with complaints ranging from a one-star rating to a five-star rating were included in the analysis.

Thematic analysis process. According to the predetermined "criteria for inclusion/exclusion of online comments," three researchers identified the comments to be included in the analysis, and all identified comments were coded separately by the three researchers involved in the study in two stages (Saldaña 2015). In the primary coding, the data set was allowed to generate codes, while in the secondary coding, the codes obtained from the first coding were structured. This was followed by steps aimed at identifying patterns, connections, and common themes among the final codes. To do this, literature on UGS/park recreation was also reviewed. The full consensus among all researchers ensured that the themes emerging from each researcher's coding took their final form (Miles et al. 2019).

Following the data screening, the final dataset comprised 4143 reviews specifically addressing complaints, forming the basis for the subsequent thematic analysis of visitor complaints. Each review was transferred to Excel, and 4143 were gathered in an Excel spreadsheet, which was then imported into MAXQDA software. Data analysis was performed using Braun and Clarke's (2006) six-phased thematic analysis approach (Braun and Clarke 2006). First, users' reviews were actively read to become familiar with the data, thereby identifying possible meanings and patterns in the codes. Second, by organizing the data into meaningful groups, initial codes were generated. Third, by gathering different codes with shared meanings, whether they could be grouped under a common theme was identified. Thus, a set of candidate themes was constructed. Fourth, considering both coded data extracts and the entire data set, the candidate themes were reviewed and refined. Fifth, each theme was defined and named. In this phase, each theme was handled in relation to the other themes to ensure that there was not too much overlap between the themes. Also, to give the reader an immediate idea of what the theme was about, it was taken into account that the name of the theme was short and concise. Last, selected vivid and compelling extracts that captured the essence of the stories about the data were reported. Further, to support the qualitative findings about the prevalence of the themes in the data, the percentages and frequencies of the codes under each theme were calculated.

Results

In total, 6135 coded data were extracted from the 4143 visitor complaints. 91 codes were then generated and gathered under five

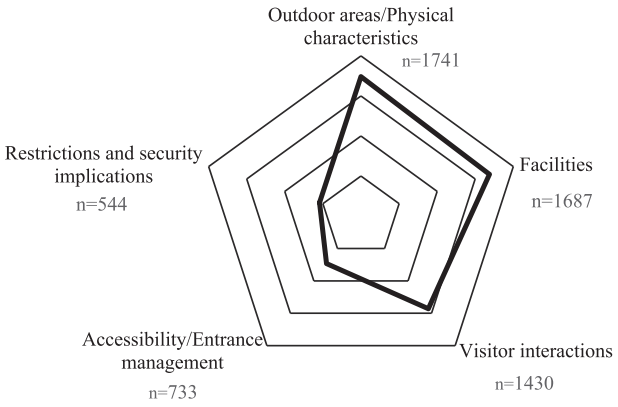

Fig. 1 Distributions of visitor complaints.



Fig. 2 Code clouds.

themes: outdoor areas/physical characteristics (28.4%), facilities (27.5%), visitors' interactions (23.3%), accessibility/entrance management (11.9%), and restrictions and security implications (8.9%) (see Figs. 1 and 2). The generated codes and themes were organized under the code system in MAXQDA and then visualized as shown in Fig. 3.

Outdoor areas/physical characteristics. Outdoor areas/physical characteristics were the most frequently referenced theme by visitors. 17 codes were generated for this theme. Visitors' primary complaints in this theme related to a lack of shade trees, a lack of outdoor benches, and poorly maintained outdoor areas. Visitors expressed their complaints as follows:

> *"I don't recommend going before sunset. It's very difficult to find tree shade."*

> *"Seating areas, such as benches, are insufficient. Many families including us had to sit on the ground."*

> *"The area was so dirty and neglected that I was very surprised, it was the first time I saw a nation garden so bad… It was full of garbage in the forest areas."*

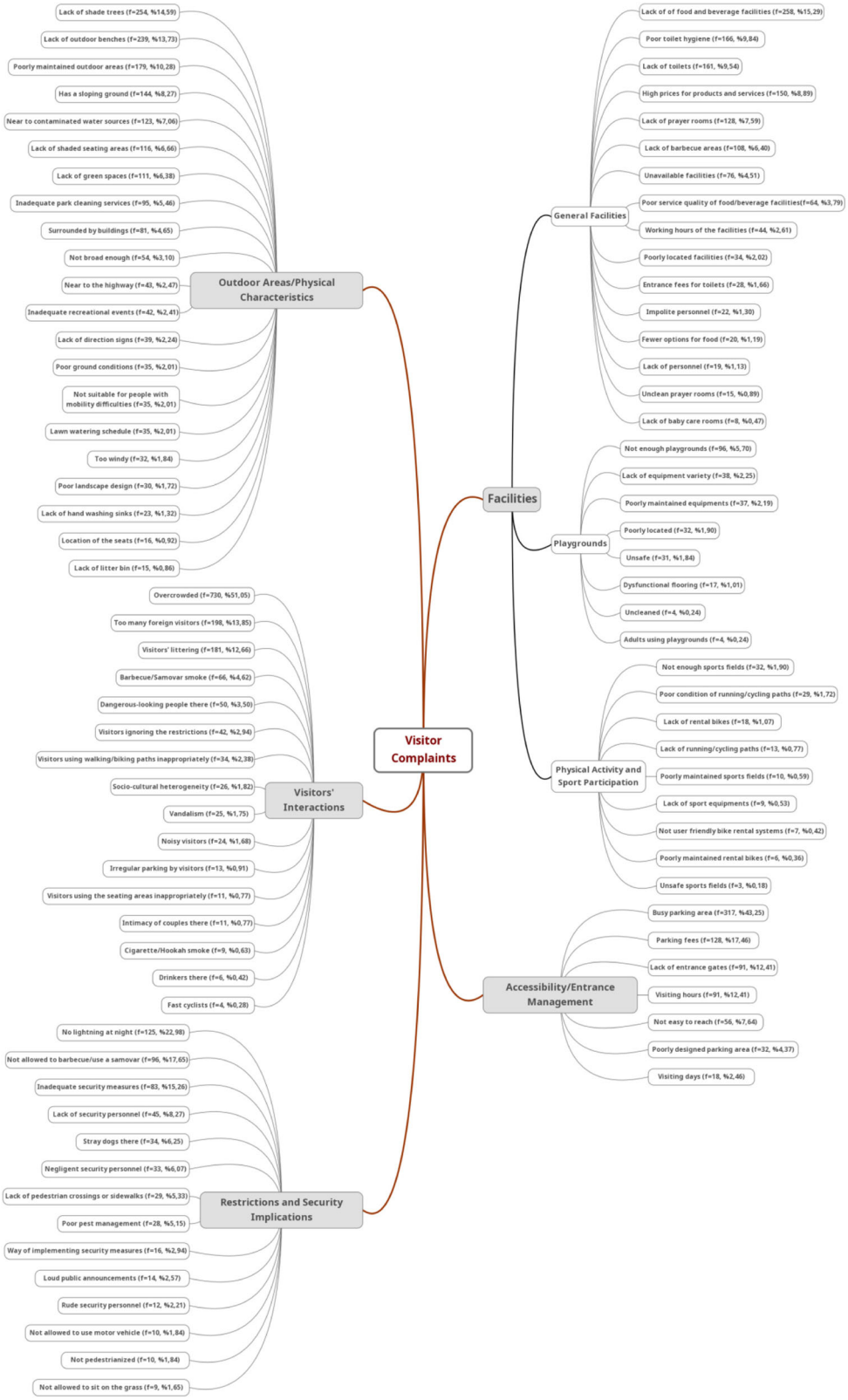

Fig. 3 Visitor Complaints.

Other common complaints included sloping ground that impeded movement and activities, as well as proximity to contaminated water sources which raised health concerns. Visitors also complained about the lack of shaded seating areas to protect them from sunlight and the lack of green spaces that spoil the natural atmosphere. Insufficient cleaning services in outdoor areas contributed to a less pleasant visiting experience. Visitors further mentioned that surrounding buildings, narrow

outdoor areas, and the proximity to busy highways reduce the attractiveness of the nation gardens. Visitors additionally reported dissatisfaction with the lack of recreational event opportunities. Concerns such as inadequate direction signs, poor ground conditions, inadequate accessibility for people with mobility difficulties, and irregular lawn watering schedules were stated by the visitors. Windy weather conditions, inadequate landscape design, and the lack of hand-washing sinks all contributed to visitor unpleasantness. In addition, inconveniently located seats and a lack of litter bins affected the usability of the gardens.

Facilities. The second theme was facilities. 33 codes were generated for this theme. Then, the theme was divided into three sub-themes: general facilities (16 codes), children's playgrounds (8 codes), and physical activity and sports (9 codes). The primary complaints in general facilities were a lack of food and beverage facilities, poor toilet hygiene, and a lack of toilets. For this sub-theme, examples of the statements most frequently complained about by visitors are given below:

"It doesn't even have a place to get water. At least there could have been a vending machine or something."

"It is a very beautiful place but the toilets are in a terrible condition, they need to be taken care of. Although it is paid, it is not hygienic."

"There is a WC problem, it's not enough. Additional public toilets required."

In addition, many of the visitors found the prices for products and services excessive. Besides, some visitors expressed their concerns about the absence and poor hygiene of prayer rooms around, since they could not fulfill their religious duties. Visitors also mentioned being disappointed by the absence of designated barbecue areas and the unavailability of some facilities. Limited food options and poor service quality in food and beverage facilities were the other issues that contributed to dissatisfaction. The working hours and locations of the facilities were also questioned by the visitors. Charging entry fees for essential services such as toilets was considered inappropriate. Inadequate and impolite personnel at the facilities further worsened the overall experience. The absence of baby care rooms was also noted as a drawback by families visiting the gardens.

Insufficient playgrounds, a lack of equipment variety, and poorly maintained equipment were the most observed complaints in the playgrounds sub-theme. Poorly located playgrounds, unsafe equipment, dysfunctional flooring, and uncleanliness made nation gardens less appealing to families with children. Besides, although uncommon, several adults monopolized children's equipment by using the playgrounds, which caused safety concerns and discomfort both for children and parents. Some examples of the most frequently addressed complaints by visitors are given below:

"There is a tiny playground in the big area, there could be more. Children are waiting in line to play."

"The playground for children is insufficient. It has a huge area but there are two swings. More different equipment could have been put, instead of ordinary swings and slides…"

"The swings are about to break and must be repaired before an accident occurs."

The most commonly reported complaints in the physical activities and sports sub-theme were a lack of a sufficient number of sports fields, poor condition of running/cycling paths, and a lack of rental bikes. Lack of running/cycling paths, poorly maintained sports fields, lack of sports equipment, user-unfriendly bike rental systems, poorly maintained rental bikes, and unsafe sports fields were also expressed by visitors as contributors to dissatisfaction by limiting their opportunities for physical activity and sports. Some examples of the most frequently reported complaints by visitors for this sub-theme are as follows:

"…there is a volleyball net in the middle of the basketball court and when there are people who want to play both basketball and volleyball, the atmosphere gets a little too complicated."

"The running and walking path should be a tartan track. This is the first time I have seen a gravel running track. It definitely needs to be fixed."

"…but I have a small request, the number of bicycles is very small considering the area. It would be better if there were a little more."

Visitors' interactions. The third theme was visitors' interactions. Six codes were generated for this theme. Complaints from the visitors were mostly about overcrowding, too many foreign visitors, and visitors' littering. Some examples of the visitor reviews are given below:

"The only downside is that it is extremely crowded, you have to wait in line for everything. It is possible to wait for half an hour in the cafeteria or WC queue. My advice, especially on weekends and public holidays, do not come."

"I was so upset that I was wandering around :(as if I was in another country). There were very few Turks. It was like a city of Arabia or Syria. I don't judge anyone, but in this case, it's not normal at all, we became foreigners in our own country."

"There are litter bins everywhere, but unfortunately, it is too beautiful park for local and foreign visitors who throw the sunflower seed shells they eat on the grass and leave food on the rocks…"

Additionally, many visitors expressed their discomfort with the overwhelming smell of barbecue and samovar smoke. Moreover, the visibility of people who appeared threatening or frightening elevated visitors' concerns and impaired their sense of personal safety. As well, visitors became irritated when they encountered others ignoring park rules, such as jumping across pedestrian or bicycle paths or behaving inappropriately in designated seating areas. Vandalism, disruptive noise from other visitors, intimacy between couples, and socio-cultural heterogeneity in shared spaces contributed to interpersonal conflicts. Besides, the prevalence of cigarette and hookah smoke, along with the presence of drinkers, exacerbated discomfort and health concerns among non-smoking visitors. Lastly, the presence of fast cyclists on the pedestrian paths drew complaints from visitors.

Accessibility/Entrance management. The fourth theme was entrance management. Six codes were generated for this theme. Under this theme, the visitors mainly mentioned the busy parking

area, parking fees, lack of entrance gates, and visiting hours. Visitors voiced their concerns about accessibility and entrance management in the following statements:

"It is very nice and clean but the parking lot is very small, especially on weekends. Last weekend we made preparations for a picnic, we couldn't find a place for the car, and we turned back."

"The parking lot has become paid. The nation garden should be used for the benefit of the public. I think twice about going because of the parking fee."

"It's ridiculous that it closes at 10 pm, what's 10 pm on a summer day? Just when it's getting cooler, you hear the announcement that the park will close."

Besides, visitors expressed their frustration with the limited public transportation options to reach the nation gardens. Since the gardens were mostly located far from the city center, they were also difficult to reach on foot. Thus, visitors had few alternatives to reach the gardens other than by automobile or motorcycle. Visitors traveling by automobile or motorcycle were also dissatisfied with the long travel time caused by frequent traffic jams along the route. One of the complaints voiced by visitors was that the nation gardens were closed to visitors on Mondays. They stated that they would prefer the gardens to be accessible to visitors every day of the week.

Restrictions and security implications. The last theme was restrictions and security implications. The main points of the 14 codes generated under this theme were no lightning at night, not being allowed to barbecue/use a samovar, and inadequate security measures. Some examples of the main visitor complaints are as follows:

"When it gets dark, the lights don't turn on and it gets pitch dark. I think the authorities should find a solution to this."

"Barbecue samovar is forbidden, people come here to picnic, this is not a playground."

"It has large and useful areas, but security is low. It needs to be more secure. The camera system should be more intense."

Visitors further criticized the way of implementing security measures, loud public announcements, a lack of security personnel, and their indifferent and rude behaviors. Visitor complaints involving pedestrianization in nation gardens differed. Some visitors complained that nation gardens were not pedestrian-friendly, while those who visited there by car or motorcycle complained about the motorized vehicle restrictions. Some of the nation gardens do not allow visitors to sit on the grass, which is deemed ridiculous and pointless by several visitors. The presence of stray dogs, pests, and mosquitoes in the area also affected the visitors' satisfaction adversely.

Discussions

Visitor satisfaction is directly linked to the positive or negative experience, as it relates to meeting needs or motives (Tian-Cole and Cromption 2003). Negative experiences often lead to complaints (Bitner et al. 1994). The study revealed that more than three-quarters of visitor complaints about urban green areas examined were due to outdoor areas/physical characteristics, facilities and visitor interactions. The primary complaint of the visitors of the nation garden is related to outdoor areas/physical characteristics. In past studies, it is seen that factors such as enjoying/being in nature (Andriotis 2011; Sreetheran, 2017), getting fresh air (Gashu et al. 2020; Sreetheran 2017), resting and viewing the scenery (Chiesura 2004) come at the beginning of the motivations of UGS visitors to visit these areas. In addition, citizens living in metropolitan areas prefer high levels of greenery, more seats and large UGS (Lo and Jim 2012). The study highlights a deficiency in Istanbul's gardens, indicating a lack of natural and physical features that align with the fundamental motivations for visiting green spaces. Consequently, this inadequacy may have heightened the demand for green areas and raised expectations among urban residents. Addressing common complaints such as insufficient tree shade and outdoor seating could significantly enhance the capacity of these spaces to fulfill visitor expectations. Managers could address these concerns by taking into account such feedback and implementing necessary improvements.

Facilities are a significant complaint subject, with complaints categorized into general facilities, children's playgrounds, and physical activity and sports opportunities. The primary issue is the lack of food and beverage facilities, as well as inadequate toilet facilities and lack of maintenance. Considering that the success of a park depends on both supply and maintenance (Jibril and Elfartas 2018) and that basic park amenities are necessary for visitors of all age groups (McCormack et al. 2010), park planning and administration must ensure proper facility maintenance and provide amenities that meet visitor needs to improve the quality of life for urban dwellers. Another complaint theme identified in the study is related to playgrounds. Prior studies on UGS usage have revealed that taking kids outside is one of the main motivations for visiting (Irvine et al. 2013). Many families go to playgrounds to be with their children or to keep their children physically active (Refshauge et al. 2012). And these facilities offer chances for socializing, playing, and carrying out physical fitness activities (Qazi 2011). Therefore, the presence and maintenance of playgrounds is crucial, especially for urban dwellers with children. The current study also found that visitors complained about lack of physical activity and sports opportunities. UGS is an important component in promoting physical activity, and these areas are one of the important quality indicators of these areas (Zhang et al. 2022). Many studies show a strong relationship between UGS and physical activity. In addition to having specially designed facilities for sports, exercise and other strenuous activities, it also offers areas where people can run or walk (Cohen et al. 2007), and is one of the most important motivational factors for city residents to use parks (Bedimo-Rung et al. 2005). UGS visitors could be influenced by the design and condition of the facilities (Bedimo-Rung et al. 2005). If visitors are not satisfied, the UGS may go underutilized or be abandoned (Ali and Nawawi 2006). For this reason, the facilities offered by UGS should favor the people's needs, demands, and preferences.

The "visitor interactions" was identified as an important complaint, highlighting the potential problems arising from encounters with crowds. Crowding research highlights its significant social impact on outdoor recreation and reveals that high human density can cause visitor stress in UGS (Arnberger and Eder 2015). UGS visitors are motivated by the experience of silence and peace (Shan 2014), and often avoid crowds to achieve this state of tranquility (Wan and Shen, 2015). The research confirms the common issue of crowding in densely populated cities such as Istanbul, highlighting the need for effective solutions to address this issue. Another theme identified within the scope of visitor interactions was that there were too many foreign visitors in the areas. UGS and city parks are crucial for social integration, providing temporary leisure spaces for various ethnic groups, and fostering a sense of belonging (Stodolska et al. 2017) and attachment (Neal et al. 2015). However, encounters between

different ethnic groups in these areas can lead to negative consequences. Dines et al. (2006) noted conflicts in neighborhood public spaces, particularly neighborhood parks, due to racial tension (Dines et al. 2006). Madanipour (2010) highlighted problematic incidents involving minorities in Rotterdam, Netherlands, due to the city's heavy use of public spaces (Madanipour 2010). Istanbul, Türkiye's largest city, is home to the highest number of immigrants, causing negative attitudes among locals (Doğan et al. 2020). This attitude is believed to be reflected in park areas and affects study results. In this context, park managers should tailor park design and event programing to embrace diverse communities and encourage positive interactions.

In the current study, another complaint issue identified is related to accessibility and entrance management. In particular, inequalities in the accessibility and distribution of parks and green spaces are an issue that is gaining increasing attention. Some of the main areas of research have focused on identifying access levels and areas that lack accessibility (Wei 2017). This situation is also shown as one of the important constraints on individuals' use of parks and green areas (Rushing et al. 2019). In this context, it is recommended that urban park planners seek strategies to increase the accessibility of urban parks to ensure that socio-cultural benefits are shared equitably (Talal and Santelmann 2021). The last complaint theme identified in this current study is restrictions and security implications. Along with its many advantages, UGS has several disadvantages that are frequently disregarded (Maruthaveeran and van den Bosch 2014). Numerous empirical investigations have indicated a direct correlation between decreased utilization of UGS and fear of crime. However, fear of park use due to perceived safety has been reported, especially among children and women (McCormick and Holland 2015). Apart from this, the literature also investigates the physical characteristics such as landscape design, vegetation density, maintenance, physical incivility, amount of light, wayfinding and legibility, and visibility of UGSs that may affect perceived safety (Mahrous et al. 2018).

This exploratory study contributes to the extensive literature by determining the complaints of visitors of Istanbul nation gardens in these areas. In this study, five complaint themes were identified for these areas, and it was reported that three of these themes named outdoor areas/physical characteristics, facilities and visitor interactions constituted three-quarters of the complaints made. Apart from these themes, other factors such as accessibility and entrance management and the limitations and security implications of nation gardens appear to be factors that generate fewer complaints. Examining the codes that comprise these themes demonstrates that complaints regarding the crowd are prominent. In this context, especially in metropolitan cities such as Istanbul, where the amount of green space is limited, park planners can integrate the suggestions, expectations and needs of visitors in improving existing parks and designing new ones. The investigation of park visitors' complaints could add a new social- and people-oriented dimension to refine design and management. In this way, by ensuring more effective use of UGS, individual and social benefits, such as health outcomes obtained from these areas, can be maximised.

Implications. The analysis of visitor grievances and the ensuing application of remedies are critical to improving UGS. The study's conclusions have several useful ramifications that apply to this situation. These suggestions provide concrete actions to resolve visitor issues and improve UGS quality. The development and administration of parks and green spaces may improve visitor satisfaction and the general quality of life in cities by using such doable measures.

Several management implications have been suggested to improve UGS in light of the study's findings. In order to enhance the physical characteristics and operational efficiency of outdoor areas, it is advised to increase the selection of sitting opportunities, such as picnic tables and benches, and to strategically place these facilities around the park. Expanding the number of trees in sitting and rest spaces can improve comfort on bright days by providing the shade that is needed. A nice and friendly atmosphere may also be maintained by enhancing maintenance and repair services and increasing the frequency of cleaning and waste collection.

Further recommendations focus on enhancing the overall visitor experience and accessibility. Ensuring the availability of clean, accessible toilets and establishing more facilities that offer diverse food and beverage options are critical for visitor satisfaction. Designing dedicated areas for children's play and sports activities can cater to a broader audience and enhance recreational opportunities. Managing the number of visitors, particularly during peak times like weekends and holidays, will help prevent overcrowding. Additionally, for visitor management, practices can be implemented to help different ethnic groups communicate and understand each other by planning activities that will encourage cultural diversity and participation. Security can be improved by enhancing lighting, installing security cameras, and increasing patrols, which will also create a safer environment for activities such as barbecuing and picnicking. Extending the working hours of services provided at UGSs and increasing public transportation options would make these spaces more accessible and user-friendly.

To ensure sustainability in UGSs, it is imperative to establish a framework that incorporates residents into the system, in addition to implementing practical applications informed by research findings. In the current study by Nguyen and Jones (2022), it is suggested that the development of natural areas can be contributed by developing an eco-surplus culture among residents. This concept is a set of environmentally friendly attitudes, values, beliefs and behaviors shared by a group of people, aimed at reducing negative anthropogenic impacts on the environment and protecting and restoring nature. Encouraging the cultivation of an eco-surplus culture has the potential to enhance city residents' awareness and appreciation of biodiversity, conservation endeavors, and initiatives aimed at addressing environmental challenges within UGSs. This approach also facilitates UGSs' role in educating visitors about environmental issues and potential solutions. Thus, urban residents have the opportunity to engage actively in environmental conservation and sustainability endeavors through such initiatives. Given this information, a comprehensive approach can be developed to protect and enhance green spaces in densely populated areas like Istanbul, where green space is limited. This approach may include nature education workshops, awareness programs, volunteer opportunities for community-based nature conservation efforts, organization of ecologically oriented recreational activities integrated with nature, and the implementation of environmentally sustainable green space designs. The increasing efforts by authorities to encourage the utilization of these areas will also enhance city residents' contact with nature. Considering that contact with nature is deemed an effective means for constructing eco-surplus culture (Vuong and Nguyen 2023), this situation can generate a cycle by fostering interaction. In this context, UGSs are believed to play a key role in the formation of eco-surplus culture within societies.

Beyond the traditional establishment of environmental conservation culture, reshaping cultural values as proposed by Vuong (2021) to incorporate the value of environmental conservation may lead to the creation of an eleventh cultural value, fostering a

long-term understanding of environmental preservation. Furthermore, this newly created cultural value introduces a novel concept of profitability measured by the degree of benefits derived from nature restoration and enhancement of sustainability conditions. In his study advocating for sustainable practices within business sectors, Vuong (2021) defines profitability as the sum of net environmental value and net monetary profit. This novel perspective on profitability could benefit from the adoption of a model in the management of urban green spaces in Istanbul, one that integrates environmental and social values into operational frameworks.

For instance, complaints regarding inadequate facilities and physical attributes of green spaces (such as lack of maintenance or insufficient natural features) could be addressed through the implementation of a semiconductor principle model. This would entail assessing the net environmental value (NEV), which includes contributions such as enhancing public health, reducing urban heat, and increasing social well-being, thereby addressing these spaces' roles.

Urban planners can ensure that investments in UGSs, whether through increased funding or public support, align with both the tangible and intangible benefits they provide by capitalizing on these values. Such an approach would not only address immediate visitor complaints but also promote a broader cultural shift towards recognizing and enhancing the true value of green spaces in urban environments.

Moreover, the integration of eco-surplus culture into UGS management could lead to more sustainable urban environments prioritizing public health and well-being. This cultural shift may encompass community engagement programs that educate and involve the public in green space improvements, thus creating a feedback loop where public interaction directly influences the continuous improvement and sustainability of these areas.

Limitations and future research. Several limitations should be considered when interpreting the findings of this study. First, the reliance on Google Maps visitor reviews introduces inherent biases, in that the sample is confined to visitors who actively use the platform. This selection bias excludes visitors who may be less technologically inclined or prefer alternative navigation tools, which limits the generalizability of the findings to the broader population. Future research could conduct face-to-face surveys or interview techniques to explore visitor complaints from individuals who are less familiar with technology. Alternative navigation platforms or online review platforms could also be used as data sources to improve the generalizability of the findings. Furthermore, the study is constrained by its limited geographical scope, as it focuses on nation gardens in Istanbul, an over-urbanized city. Therefore, the findings may not comprehensively represent the experiences and complaints of nation garden visitors in less urbanized cities. Future studies could focus on visitor complaints regarding urban green spaces in less urbanized cities.

Data availability

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

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