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QUANTIFYING THE QUALITY AND DETECTING SOCIAL INEQUALITY IN THE PROSPEROUS AND DEPRIVED ZONES URBAN PARKS OF TABRIZ, IRAN

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Abstract: High-quality urban parks within the urban built environment will help create healthy and sustainable cities. This study aimed to analyze the quality of two urban parks located in deprived and prosperous zones of Tabriz city, Iran, which present high relevance for ecological equity topic. The study merely explored users' perceived quality, considering sub-factors such as sense of place, satisfaction, security, comfort, and perception of attractiveness using a subjective method. The results show that the prosperous zone urban park (PZUP) has average quality, however, has significantly better status in terms of public satisfaction, security, comfort, perceived attractiveness, and sense of belonging to place, compared to the deprived zone urban park (DZUP). Since security influences people's perception of other quality indicators in PZUP, approaches to increase citizens' sense of security can greatly improve the quality of PZUP. In PZUP, inducing a higher sense of security will contribute to higher comfort, a stronger sense of belonging to place, and a positive perception of attractiveness. On the contrary, there are deep quality problems in DZUP. Quality and security problems of the DZUP root in the informal settlements around the park. The results show the priority to solve the problems in the park neighborhood. These have high relevance for enhancing the equity in accessing urban parks, both in DZUP and PZUP.

Keywords: Urban Parks, Parks Quality, Perception, ecological equity, Tabriz, Iran

1. INTRODUCTION

Urban parks substantially influence the mental health and well-being of urban dwellers and help create a healthy society promoting healthy behaviors and social interactions (de Blasio 2016; Markevych et al., 2017; Sarkar et al., 2018; van den Bosch & Sang 2017; Jackson et al., 2013; Sallis et al., 2012). Urban green spaces also improve air quality (Matos et al., 2019), visual attractiveness, social equity (Haase et al., 2014), and urban sustainability (Fuller & Irvine 2010). The fast urban expansion has led to poor access to high-quality and equitable distributed urban parks (Grădinaru et al, 2020). In urban deprived areas, people with critical health issues are those with poor access to safe and high-quality parks (Wolch et al., 2014). The quality of urban parks is the most important factor determining their abilities in attracting visitors (Zwierzchowska et al., 2018; Moran et al., 2020). Thus, parks having well-maintained infrastructure and support facilities are more likely to be used by citizens (Cohen et al., 2016). A previous study explored the relationship between the number and accessibility of urban parks and the city population (Kabisch & Haase, 2013). However, several studies focus on the inside quality of urban parks and their ability to respond to the needs of urban citizens (Niță & Iojă, 2020). A study from the USA has shown that urban parks of derivate zones are places of crime, which dramatically lead to a lower sense of security and comfort (Vaughan et al., 2013). This study shows that the DZUPs have less aesthetical quality, compared to PZUPs. In addition, Rigolon (2016) shows that people having a low income has low accessibility to urban parks, while high-income have better accessibility to safe parks. The security level of the parks has been the most important

factor manifesting the quality of the urban parks.

People's perceptions have been criteria to explore the quality of urban parks (Andersson et al., 2019; Raymond et al., 2016; Rodriguez-Valencia et al., 2020). Several studies have investigated a dimension of quality, such as people's perception of safety (Burby & Rohe 1989), physical attributes of place (Badiu et al., 2016; Rahimi et al., 2018), attractiveness (Tarashkar et al., 2020), mental restoration (Bell 2005), thermal comfort (Das et al., 2020), and sense of belonging to place (Walton & Brady 2017).

1.1. Satisfaction

Several studies have shown that the higher quality of urban landscapes is in close relationship with people's satisfaction and well-being (Leslie et al., 2010; Lee & Maheswaran 2011). Cooper et al., (2008) have shown that appropriate recreational opportunities within urban parks lead to higher public satisfaction. A previous study has explored the quality of physical attributes and considered the results to reveal public overall satisfaction (Pearson et al., 2013). Sickler & Fraser (2009) explored visitors' enjoyment to manifest the degree of satisfaction. Roberts et al., (2019) studied relationships between park features, park satisfaction, and park use in a deprived urban zone using a questionnaire, and found that more amenities, greater usability, and fewer incivilities lead to higher public satisfaction. Variety of amenities, their usability, and lack of disturbing factors in such places were highly correlated with higher perceived satisfaction.

1.2. Sense of belonging to place

A sense of belonging to place forms the basis of communication between individuals and their surrounding environment (Sakhaeifar & Ghoddusifar 2016). Sense of belonging to place refers to a feeling in which an individual accepts, respects, and values a social environment (Walton & Brady 2017). As, the sense of belonging to place increases, the perceived quality goes up (Williams & Patterson 2008). Sakhaeifar & Ghoddusifar (2016) explored people's sense of place and used the results to manifest the quality.

1.3. Comfort

A high-quality urban park should ensure people's comfort and engagement. Bell (2005) has illustrated those facilities for children and the disabled can significantly improve the sense of comfort. In most recent studies, climatic comfort has been studied. Feng et al., (2020) assessed how landscape patterns could influence the thermal comfort of urban citizens. The results of their study illustrated that landscape patterns in small-scale landscapes impact thermal comfort, especially in summer. Sun et al., (2017) evaluated the impact of urban green space and landscape design on people's thermal comfort. They showed that tree species contribute to thermal comfort on hot summer days, and hardened ground disturbs the thermal comfort (Sun et al., 2017).

1.4. Visual attraction

Attractive urban landscapes are necessary to establish high-quality environments. The attractivity of urban parks in all seasons has been introduced as equality criteria in the study of Raymond et al., (2016). Jahani & Saffariha (2020) have found that landscape features such as trees, water bodies, flowers, and fewer buildings contribute to people's higher perception of attractiveness in urban landscapes.

1.5. Security

A public sense of security is an essential factor affecting people's satisfaction and perception of quality (Rafieian et al., 2014). Providing a secure environment for citizens should be considered in any planning and design. A sense of security refers to a feeling originating from the perception of potential risks (Ruiter et al., 2001) or fear of crime (Maruthaveeran et al. 2015). According to the findings of Loewen et al., (1993), the lighting system is the most important factor influencing people's sense of security. Warr (1990) has found that darkness increases fear of crime. Forsyth et al., (2005) have illustrated that higher visibility of different parts of urban parks induces a sense of security. Mahrous et al., (2018) have explored the association between perceived security and physical attributes of urban parks. They have found that landscape design and visibility of surroundings contribute to higher perceived security in urban parks.

A few previous studies have focused on the multidimensionality aspect of quality (Panzaru et al., 2021). Raymond et al., (2016) have explored people's sense of satisfaction, belonging to place, comfort, security, and perceived attractiveness in urban blue space. Agunloye et al., (2018) have explored the factors influencing individuals' perception of quality using a questionnaire. Factors such as children's play facilities, lighting, security, aesthetics, cleanliness, and nearness to health facilities were assessed in their study.

There are several urban parks in Tabriz city of, Iran, but not all of them have the same quality and, as a result, are not equally welcomed by the citizens. This study aims to analyze the public perception of

quality in PZUP and DZUP and compares the quality of DZUP and PZUP to solve social inequalities.

2. METHODOLOGY

2.1. Study area

Tabriz is a city in the northwest of Iran and the capital of East Azerbaijan province; it is the fourth largest city in Iran and is situated at an altitude of 1350 m at the junction of the Quri River and Aji River (Rahimi 2016).

Ten municipal districts or zones are considered to divide urban areas, and a separate municipality manages each urban zone.

The urban parks in the city are categorized into five groups (pocket park, neighborhood park, community park, regional park, and city park) (Breuste & Rahimi 2015) (Table 1). There are six city parks in Tabriz, and among them, El Goli Park is located in the most prosperous city zone (zone 2, southeast of Tabriz) and Eram Park is established in the most deprived area (zone 10, northwest of Tabriz).

Inadequate employment opportunities in the rural areas around the Tabriz metropolitan, the possibility of access to social and economic services in the city, and higher quality of urban life have led to the migration of unemployed rural inhabitants to the city of Tabriz. Because of the inadequate expertise and skills, rural migrants remained unemployed in the city and built informal settlements. The immigrant population has settled in Zone 10 of Tabriz. Poverty, traffic congestion, social injuries, increased mental and personality disorders, and the issues of fair distribution of amenities and services are now tangible in this part of the city. On the contrary, Zone 2 is the prosperous area of the city where people with high incomes reside there. Although both parks in these two urban zones are categorized as City Park, they have significant differences in terms of quality, which the present study aims to prove.

2.2 Research method

The study uses a qualitative method to explore the critical variables affecting the resilience and sustainability of urban landscapes following the framework proposed by Andersson et al., (2019). The study merely explores the factors influencing public perceived quality in urban parks using questionnaires. Following Raymond et al., (2016), the quality indicators studied were to sense of belonging to place, satisfaction, comfort, visual attraction, and security. Each quality factor was evaluated using several open and closed questions.

The sample of the study was visitors of the urban parks located in the 2nd district (El-Goli Park) and 10th district (Eram Park) of Tabriz. Since there is no accurate statistical information on the number of daily users, the sample size was calculated using the formula ($n=Z^2.p(1-p)/e2$) proposed by Mitra and Lankford (1999). In this formula, p is the probability of occurrence of the condition, and it is assumed to be fifty percent. Z should be equal to 1.96 for a confidence

Table 1. Area and accessibility of urban parks of Tabriz (Breuste & Rahimi, 2015)

Park	Description	Area (ha)	Access
Pocket park	A mini park or vest-pocket park is an urban open space on a small scale. Pocket parks are scattered throughout the urban areas where they serve the immediately local population.	0.5	200 m
Neighborhood park	A neighborhood park is typically a small park, usually between 0.5 and 2 ha. They typically have playground facilities and are located within a 600-m distance of residential areas. Parents with young children are the main users.	0.2 to 2	200 to 600 m
Community park	Community parks serve more than one neighborhood but are not intended to serve the city as a whole. Community parks have more recreational facilities such as sports fields and recreational facilities.	2 to 4	600 to 1,200 m
Regional park	A regional park is a mid-sized park providing a range of facilities and activity space for recreation or sport. These parks cater to large groups and are appealing to a range of users or groups. They serve several communities or suburbs and are a fairly well-known destination for those people living within their catchment. These parks are the major parks in urban regions.	4 to 10	1,200 to 2,500 m
City park	A city park is a major recreation or sports park that offers a wide variety of opportunities to a broad cross-section of residents of a planning scheme area. These parks are large and well known amongst residents; these parks are major destinations within a planning scheme area.	More than 10	30-min drive

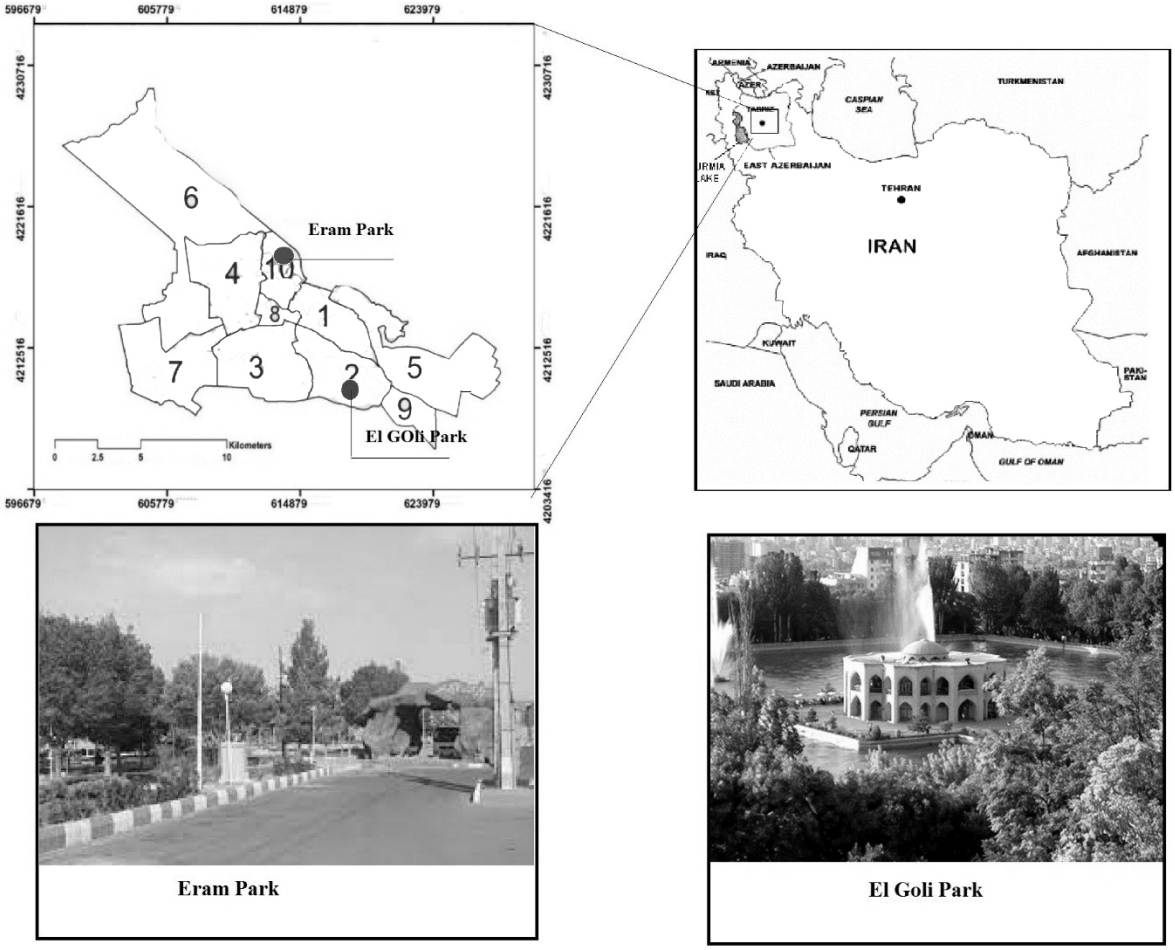

Figure 1. Map of the study areas

level of 95%, and standard deviation (e) must be less than 5%. We considered the standard deviation to be 3.5%. Therefore, the sample size is 204 individuals.

Questionnaires were distributed following a probabilistic sampling method (random cluster sampling). Two separate research teams were placed in each park from 8:00 am to 12:00 pm and randomly distributed questionnaires to 204 visitors in each park, from July to September 2018. Survey participants were asked to answer the questions on a five-point Likert scale (1 very low, …… 5 very high).

2.3. Data analysis

SPSS software version 21 was used to analyze data. Sub-factors associated with quality were categorized into five main categories, namely satisfaction, visual attraction, comfort, sense of belonging to the place, and security. Cronbach Alpha was checked to be higher than 0.6 for each sub-factor. Descriptive mean analysis was used to describe basic features of quality sub-factors. For detecting quality differences between the two parks, a paired-samples t-test was performed for each quality sub-factor. The relationship between the quality sub-factors was determined using B-variate correlation and Pearson's correlation coefficient.

3. RESULTS

3.1. Status of quality factors of the urban parks

3.1.1. Satisfaction

Mean values and mean differences for quality criteria in each urban park were calculated and compared. Criteria selected for examining satisfaction were park cleanliness, quality of playground equipment, recommending the park to friends, and satisfaction. Briefly, results indicated significantly lower public satisfaction (P= .00) with the facilities located at Eram Park (Mean= 2.78), compared to El Goli Park (Mean=4.3) (Table 2).

3.1.2. Attraction

The results also show significant differences in the attractiveness of the parks (P value= .00). While the attractiveness of El Goli Park is in favorable

Table 2. Satisfaction with the parks

	Sub- factor	El Goli	Eram
Mean		4.3	2.78
Standard deviation		0.51	0.71
SEM		0.04	0.05
two-tailed P value*		.00	
T		17.75	
Df		203	
Mean	Cleanliness	4.6	2.69
	The quality of playground equipment	4.6	3.00
	Recommending to friends	4.4	2.63
	Satisfaction with the extent of the landscape	3.6	2.81
Reliability		0.9	0.77

*A 95% confidence level

Table 3. The attractiveness of the urban parks

	Sub- factor	El Goli	Eram
Mean		4.07	2.52
Standard deviation		0.58	1.06
SEM		0.04	0.07
two-tailed P value*		.00	
T		46.01	
Df		203	
Mean	Visual attractiveness of landscape features	4.60	2.91
	The success of the place in attracting visitors due to its visual attraction	4.20	3.00
	Attractiveness in all seasons	3.40	2.66
Reliability		0.77	0.89

*A 95% confidence level

condition (Mean= 4.07), Eram Park remains poor in terms of aesthetic quality (Mean= 2.52) (table 3).

3.1.3. Comfort

The feeling of comfort in urban parks was evaluated by considering criteria such as thermal comfort, adequate extent for optimal use, suitable access routes and walking paths, and access to medical centers and emergency services in the shortest time. The results illustrate significant higher (P value= .00) sense of comfort in El Goli Park (Mean= 4.05), compared to Eram Park (Mean=2.98). Therefore, Eram Park remains weak in terms of comfort (Table 4).

3.1.4. Sense of belonging to place

Criteria selected for exploring sense of belonging to place in the urban parks were sense of responsibility for park cleaning, the consistency of the elements with the culture and social status of Tabriz

Table 4. Sense of comfort in the urban parks

	Sub- factor	El Goli	Eram
Mean		4.05	2.98
Standard deviation		0.49	0.59
SEM		0.03	0.04
two-tailed P value*		.00	
T		152.45	
Df		203	
Mean	Sense of comfort in the park and adequate shade (Thermal comfort)	4.39	2.93
	Adequate extent for optimal use	4.20	3.08
	Suitable access routes and walking paths	3.90	2.85
	Access to medical centers and emergency services in the shortest time	3.60	3.07
Reliability		0.68	0.60

*A 95% confidence level

Table 5. Sense of belonging to place in the urban parks

	Sub- factor	El Goli	Eram
Mean		3.93	2.93
Standard deviation		0.65	0.76
SEM		0.045	0.04
two-tailed P value*		0.00	
T		129.52	
Df		203	
Mean	Sense of responsibility for park cleaning	4.20	2.97
	The consistency of the elements with the culture and social status of Tabriz city	3.80	3.04
	Tendency to plant trees and flowers	3.79	2.79
Reliability		0.83	0.70

*A 95% confidence level

city, and people's tendency to plant trees and flowers. Citizens in El Goli Park (Mean= 3.93) have a significantly higher (P= .00) sense of belonging to place, compared to people who visit Eram Park (Mean= 2.93). The detailed results can be found in table 5.

3.1.5. Security

Perceived security in the urban parks was determined using criteria such as the possibility of seeing around and playground, lack of disturbing factors and vandalism, appropriate barriers for the playground, citizens' desire to use the park late at the night, and also their desire to participate in public park activities. Although perceived safety in El Goli Park is not at its best level (Mean= 3.44), it is significantly higher (P= .00) when compared to Eram Park (Mean= 2.33) (Table 6).

3.2. Correlation between equality indicators

This part of the study examines the correlation between quality indicators to detect the most important indicator influencing the quality (Table 7).

There were no significant correlations between the quality criteria in Eram Park. However, significant correlations were detected between the indicators studied for El Goli Park. The results of B- the variate correlation revealed that all quality indicators significantly influence the overall quality of El Goli Park. Quality is in close relationship with security (r= 0.73, α= 0.00), and sense of place (r= 0.68, α= 0.00). These results manifest that the quality El Goli Park can be improved through these two quality criteria. Other important factors affecting public perception are the pleasantness of the place (r= 0.65, α= 0.00), the sense of comfort (r= 0.48, α= 0.00), and the attractiveness (r= 0.42, α= 0.00).

It is also checked whether the quality indicators affect each other (Table 8). Correlation analysis revealed a moderately strong correlation between the sense of place and comfort (r= 0.58, α= 0.00). In addition, a positive correlation was observed between the sense of place and security (r= 0.38, α= 0.00).

Besides, the sense of security is correlated with landscape attractiveness (r= 0.59, α= 0.00), and sense of comfort (r= 0.80, α= 0.00). Therefore, the higher sense of security leads to higher sense of comfort and perceived attractiveness, and vice versa.

4. DISCUSSION

Previous studies usually evaluated one dimension of quality (Hur & Nasar 2014; Tarashkar et al., 2020; Das et al., 2020; Walton & Brady 2017).

Table 6. Public sense of security in urban parks

	Sub- factor	El Goli	Eram
Mean		3.44	2.33
Standard deviation		0.64	0.41
SEM		0.04	0.02
two-tailed P value*		.00	
T		15.06	
Df		203	
Mean	Possibility of seeing around and playground	3.80	2.74
	Lack of disturbing factors and vandalism	3.59	2.02
	Appropriate barriers for the playground	3.40	2.58
	A desire to use the park late at the night	3.20	2.15
	A desire to participate in public park activities	3.20	2.84
Reliability		0.79	0.61

*A 95% confidence level

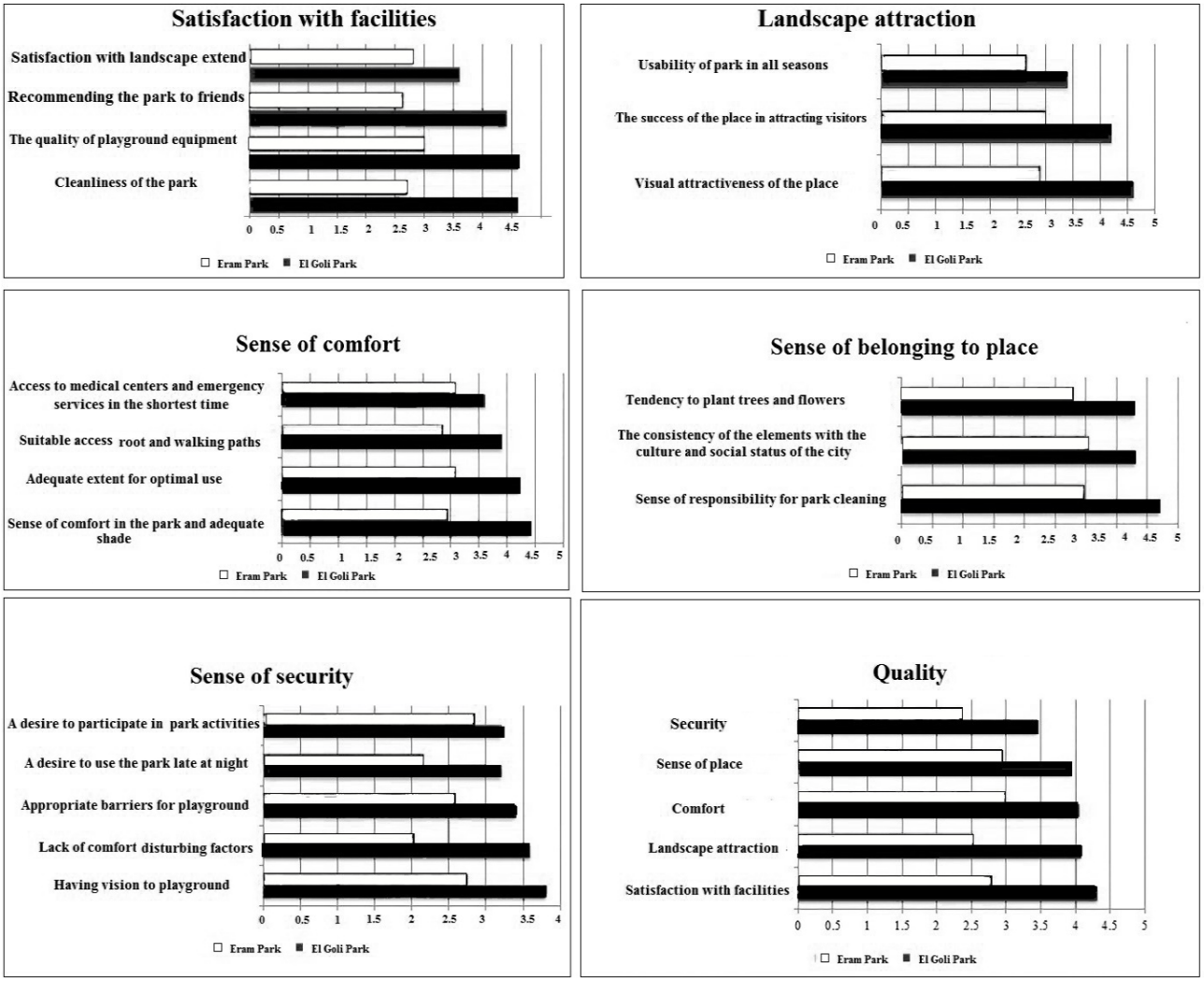

Figure 2. Comparing quality factors in the urban parks (1=very low…5= very high)

Table 7. B-variate correlation for detecting most important quality indicator

El Goli Park		Satisfaction	Attractiveness	Comfort	Sense of place	Security
Quality	Correlation Coefficient	.65**	.42**	.48**	.68**	.73**
	Sig. (2-tailed)	.00	.00	.00	.00	.00
*. Correlation is significant at the 0.05 level (2-tailed).						
**. Correlation is significant at the 0.01 level (2-tailed). Correlation coefficient: <0.3 negligible correlation, 0.3–0.5 weak correlation, 0.5–0.7 moderately strong correlation, 0.7–0.9 strong correlation, 0.9<very strong correlation (Hinkle et al., 2003).						

Table 8. The results of B-variate correlation between the quality indicators

			Comfort	**Security**
El Goli Park	**Sense of belonging place**	Correlation Coefficient	.58**	.38**
		Sig. (2-tailed)	.00	.00
	Attractiveness	Correlation Coefficient	-	.59**
		Sig. (2-tailed)		.00
	Comfort	Correlation Coefficient	-	. 80**
		Sig. (2-tailed)		.00
	*. Correlation is significant at the 0.05 level (2-tailed).			
**. Correlation is significant at the 0.01 level (2-tailed). Correlation coefficient: <0.3 negligible correlation, 0.3–0.5 weak correlation, 0.5–0.7 moderately strong correlation, 0.7–0.9 strong correlation, 0.9<very strong correlation (Hinkle et al., 2003).				

Because improving the quality of the environment requires comprehensive attention to all dimensions, this study has examined several aspects of quality including satisfaction, perceived attractiveness, comfort, belonging to place, and security following Raymond et al., (2016) and Andersson et al., (2019). The quality of the urban parks located in 2nd (El Goli Park) and 10th (Eram Park) zones of Tabriz metropolitan was quantified in the current study. The results indicated that the quality of the urban parks located in deprived (10th district) and prosperous (2nd district) zones of the city are completely unequal. A similar study in the United States proved similar quality differences between urban parks located at deprived and prosperous zones (Vaughan et al., 2013). Therefore, the disparity in the quality of urban parks is not specific to a specific country or region.

Satisfaction with urban manifests in people's perception of quality (Kothencz et al., 2017). People are satisfied with El Goli Park and dissatisfied with Eram Park. Dissatisfaction with Eram Park could be associated with its less use frequency (Kearney 2006). Thus, less satisfaction with Eram Park justifies its unusable status and also quality inequalities of the studied urban parks.

The results confirmed El Goli Park is visually attractive, but Eram Park remains significantly pure in this regard. Attractive landscapes within cities enhance the aesthetic experience of citizens, and ultimately improve the quality of the urban environment (Amoruso & Salerno 2019; Hami & Tarashkar 2018, Rahimi et al. 2021). Therefore, it is necessary to concentrate efforts to improve people's aesthetic perception. This could be a valuable step toward solving social inequality.

Fear of crime and a lower sense of security will decline people's tendency to visit urban parks (Powell-Wiley et al., 2017; Sreetheran & Van Den Bosch 2014), and can lead to higher social inequality. The results indicated that people have a significantly lower sense of security in Eram Park. As mentioned before, Eram Park is located adjacent to the informal settlements. A previous study confirms that informal settlements diminish people's sense of security (Van Gelder 2015). It can be concluded that the security problems of this park originate from its surrounding areas. Therefore, first, the city authorities should think of a solution for the informal settlements of this urban zone.

Besides, some studies have shown that cleanliness and proper maintenance increase the sense of security (Hughey et al., 2016). Our results manifest that people are dissatisfied with the cleanness of Eram Park. Therefore, special attention should be paid to the maintenance and cleaning of this park. Visitors of the studied urban parks have a low sense of belonging to place.

Sense of belonging to place in urban societies is in close relationship with security, pleasantness of place, and historical identity (Steele 1981). We found that a higher sense of security and comfort in El Goli Park could induce a higher sense of belonging to place. In addition, we illustrated that security and sense of place most are the important factors influencing people's perception of quality. Sense of satisfaction, sense of comfort, and perception of attractiveness are other important factors influencing perceived quality. A previous study has also gained similar results and proved that perception of quality has a close connection with sense of security and perception of attractiveness (Rafieian et al. 2014).

In addition, people's perception of security in El Goli Park is highly correlated with their perception of attractiveness. A study has manifested that people's perception of aesthetic aspects and their sense of security are influenced by common factors (Anderson & Stokes 1989). Another study has shown that lower aesthetic aspects of urban parks cause more severe problems, including security problems (Vaughan et al., 2013). The correlation between security and attractiveness has also been confirmed in the study of Shaffer & Anderson (1985). Therefore, Citizens' sense of security in El Goli Park can be strengthened by increasing its attractiveness of the place. There is no correlation between security and other quality factors of Eram Park. According to the findings of Cohen et al., (2016) in extremely insecure areas crime is natural, and has no effect on daily routines.

Urban parks are the focus of environmental conflicts, due to their services and disservices provided to human society (Nita & Ioja, 2020) Planning and management of urban parks considering people's perception of environmental quality will avoid such conflicts.

5. CONCLUSION

The most important problem of the urban parks is their poor security and related issues. Therefore, measures should be taken to improve the security problems of these urban parks. A higher sense of comfort, sense of belonging to place, and perception of security will induce a higher sense of security. It should also be considered that improvements in insecurity of PZUP might lead to higher comfort, sense of belonging to place, and a perception of attractiveness.

The quality and security problems of Eram Park roots in the poor quality of its neighborhood area. Therefore, it is necessary to solve the problems

of the neighborhood area, before carrying out any management operations inside the park.

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REFERENCES

Agunloye, O. O., Ajakaiye, O. O., Akinola, A. O., Okagbue, H. I. & Afolabi, A. O., 2018. *Datasets on factors influencing the urban environmental quality of intra-urban motor parks across density areas of Lagos metropolis.* Data in Brief, 19, 2109-2118. DOI: https://doi.org/10.1016/j.dib.2018.06.116.

Amoruso, G., & Salerno, R., 2019. *Cultural landscape in practice: conservation vs. emergencies*. Berlin: Springer. DOI: https://doi.org/10.1007/978-3-030-11422-0.

Anderson, L. M., & Stokes, G. S., 1989. *Planting in parking lots to improve perceived attractiveness and security.* Arboriculture & Urban Forestry, 15, 7–10. DOI: https://doi.org/10.48044/jauf.1989.002.

Andersson, E., Langemeyer, J., Borgström, S., McPhearson, T., Haase, D., Kronenberg, J., ... & Baró, F., 2019. *Enabling green and blue infrastructure to improve contributions to human well-being and equity in urban systems*. BioScience, 69(7), 566-574. DOI: https://doi.org/10.1093/biosci/biz058.

Badiu, D. L., Iojă, C. I., Pătroescu, M., Breuste, J., Artmann, M., Niță, M. R., Grădinaru, S. R., Hossu, C. A., & Onose, D. A., 2016. *Is urban green space per capita a valuable target to achieve cities' sustainability goals? Romania as a case study.* Ecological Indicators, 70, 53-66. DOI: https://doi.org/10.1016/j.ecolind.2016.05.044.

Bell, S., 2005. *Nature for people: the importance of green spaces to communities in the east midlands of England.* In *Wild Urban Woodlands*, Kowarik, I., Körner, S., Eds. Berlin: Springer, pp 81-94. DOI: https://doi.org/10.1007/3-540-26859-6_5.

Breuste, J., & Rahimi, A., 2015. *Many public urban parks, but who profits from them? The example of Tabriz, Iran*. Ecological Processes, 4, 1-15. DOI: https://doi.org/10.1186/s13717-014-0027-4.

Burby, R. J., & Rohe, W. M., 1989. *Deconcentration of public housing effects on residents' satisfaction with their living environments and their fear of crime. Urban Affairs Review*, 25 (1), 117–141. DOI: https://doi.org/10.1177/004208168902500108.

Cohen, D. A., Han, B., Derose, K. P., Williamson, S., Marsh, T., Raaen, L., & McKenzie, T. L., 2016. *The paradox of parks in low-income areas: Park use and perceived threats.* Environment and Behavior, 48(1), 230–245. DOI: 10.1177/0013916515614366.

Cooper, C., Fletcher, J., Gilbert, D., & Wanhill, S., 2008. *Tourism –Principles and Practice (4th ed.*). UK: FT Prentice Hall.

Das, M., Das, A., Mandal, S., 2020. *Outdoor thermal comfort in different settings of a tropical planning region: A study on Sriniketan-Santiniketan Planning Area (SSPA), Eastern India*. Sustainable Cities and Society, 63, 102433. DOI: https://doi.org/10.1016/j.scs.2020.102433.

de Blasio, B., 2016. *Healthier neighbourhoods through healthier parks*. Lancet (London, England), 388(10062), 2850. DOI: https://doi.org/10.1016/s0140-6736(16)31579-3.

Feng, L., Zhao, M., Zhou, Y., Zhu, L., & Tian, H., 2020. *The seasonal and annual impacts of landscape patterns on the urban thermal comfort using Landsat*. Ecological Indicators, 110, 105798. DOI: https://doi.org/10.1016/j.ecolind.2019.105798

Forsyth, A., Musacchio, L. & Fitzgerald, F., 2005. *Designing small parks: a manual addressing social and ecological concerns*. Hoboken: Wiley.

Fuller, R. A. & Irvine, K. N., 2010. I*nteractions between people and nature in urban environments.* pp. 134–171 in: Gaston, K.J. (ed.) *Urban Ecology*. Cambridge: Cambridge University Press. DOI: https://doi.org/10.1017/CBO9780511778483.008.

Grădinaru, S. R., **Ioja, I. C.**, **Vanau, G. O.**, **& Onose, D. A.**, 2020. *Multi-dimensionality of land transformations: from definition to perspectives on land abandonment*. Carpathian Journal of Earth and Environmental Sciences 15, 167-177, DOI: https://doi.org/10.26471/cjees/2020/015/119.

Haase, D., Larondelle, N., Andersson, E., Artmann, M., Borgström, S., Breuste, J., Gomez-Baggethun, E., Gren, Å., Hamstead, Z., Hansen, R. & Kabisch, N., 2014. *A quantitative review of urban ecosystem service assessments: concepts, models, and implementation*. Ambio, 43(4), pp.413-433. DOI: https://doi.org/10.1007/s13280-014-0504-0.

Hami, A., & Tarashkar, M., 2018. *Assessment of women's familiarity perceptions and preferences in terms of plants origins in the urban parks of Tabriz, Iran*. Urban Forestry & Urban Greening, 32, 168-176. DOI: https://doi.org/10.1016/j.ufug.2018.04.002.

Hinkle, D. E., Wiersma, W., & Jurs, S. G., 2003. Applied statistics for the behavioral sciences. Boston: Houghton Mifflin.

Hughey, S. M., Walsemann, K. M., Child, S., Powers, A., Reed, J. A., & Kaczynski, A. T., 2016. *Using an environmental justice approach to examine the relationships between park availability and quality indicators, neighborhood disadvantage, and racial/ethnic composition*. Landscape and Urban Planning, 148, 159–169. DOI: https://doi.org/10.1016/j.landurbplan.2015.12.016.

Hur, M., & Nasar, J. L., 2014. *Physical upkeep, perceived upkeep, fear of crime and neighborhood satisfaction*. Journal of environmental psychology, 38, 186-194. DOI: https://doi.org/10.1016/j.jenvp.2014.02.001.

Jackson, R. J., Dannenberg, A. L., & Frumkin, H., 2013. *Health and the built environment: 10 years after*. American Journal of Public Health, 103(9), 1542–1544. DOI:

https://doi.org/10.2105/ajph.2013.301482.

Jahani, A., & Saffariha, M., 2020. *Aesthetic preference and mental restoration prediction in urban parks: An application of environmental modeling approach*. Urban Forestry & Urban Greening, 54, 126775. DOI: https://doi.org/10.1016/j.ufug.2020.126775.

Kabisch, N., & Haase, D., 2013. *Green spaces of European cities revisited for 1990–2006*. Landscape and urban planning, 110, 113-122. DOI: https://doi.org/10.1016/j.landurbplan.2012.10.017.

Kearney, A. R., 2006. *Residential development patterns and neighborhood satisfaction—impacts of density and nearby nature*. Environment & Behavior, 38(1), 112–139. DOI: https://doi.org/10.1177/0013916505277607.

Kothencz, G., Kolcsar, R., Cabrera-Barona, P., & Szilassi, P., 2017. *Urban green space perception and its contribution to well-being*. International Journal of Environmental Research and Public Health, 14(766). DOI: https://doi.org/10.3390/ijerph14070766.

Lee, A. C. K., & Maheswaran, R., 2011. *The health benefits of urban green spaces: a review of the evidence*. Journal of Public Health (Bangkok), 33 (2), 212–222. DOI: https://doi.org/10.1093/pubmed/fdq068.

Leslie, E., Sugiyama, T., Ierodiaconou, D., Kremer, P., 2010. *Perceived and Objectively Measured Greenness of Neighbourhoods: Are They Measuring the Same Thing?* Landscape & Urban Planning, 95 (1), 28–33. DOI: https://doi.org/10.1016/j.landurbplan.2009.11.002.

Loewen, J. L., Steel, G. D., Suedfeld, P., 1993. *Perceived Safety from Crime in the Urban Environment*. Journal of Environmental Psychology, (13), 323-31.DOI: https://doi.org/10.1016/s0272-4944(05)80254-3.

Mahrous A. M., Moustafa Y. M. & El-Ela M. A. A., 2018. *Physical characteristics and perceived security in urban parks: Investigation in the Egyptian context.* Ain Shams Engineering Journal, 9(4), 3055-3066. DOI: https://doi.org/10.1016/j.asej.2018.07.003.

Markevych, I., Schoierer, J., Hartig, T., Chudnovsky, A., Hystad, P., Dzhambov, A. M., Nieuwenhuijsen, M. J., 2017. *Exploring pathways linking greenspace to health: Theoretical and methodological guidance*. Environmental Research, 158, 301–317. DOI: https://doi.org/10.1016/j.envres.2017.06.028.

Matos, P., Vieira, J., Rocha, B., Branquinho, C., Pinho, P., 2019. *Modeling the provision of air-quality regulation ecosystem service provided by urban green spaces using lichens as ecological indicators*. Science of the Total Environment, 665, 521-530. DOI:https://doi.org/10.1016/j.scitotenv.2019.02.023.

Mitra, A., & Lankford, S., 1999. Research methods in park, recreation, and leisure services. Illinois: Sagamore Publishing.

Moran, M. R., Rodríguez, D. A., Cotinez-O'Ryan, A. Miranda, J. J., 2020. *Park use, perceived park proximity, and neighborhood characteristics: Evidence from 11 cities in Latin America*. Cities, 105, 102817. DOI: https://doi.org/10.1016/j.cities.2020.102817.

Maruthaveeran, S., & Van den Bosh, C. K., 2015. *Fear of crime in urban parks–What the residents of Kuala Lumpur have to say?*. Urban Forestry & Urban Greening, 14(3), 702-713. DOI: https://doi.org/10.1016/j.ufug.2015.05.012.

Niță, M. R., & Ioja, C. I., 2020. *Environmental conflicts in the context of the challenging urban nature*. Carpathian Journal of Earth and Environmental Sciences, 15, 471-479. DOI: https://doi.org/10.26471/cjees/2020/015/146.

Panzaru, M. D. R., Ioja, I. C., & Nita, A., 2020. *Are Nature-based Solutions a new approach in post-industrial regeneration projects?*, Carpathian Journal of Earth and Environmental Sciences, 15, 179 -188, DOI: https://doi.org/10.26471/cjees/2020/015/120.

Pearson, E. I., Dorrian, J., & Litchfield, C. A., 2013. *Measuring zoo visitor learning and understanding about orangutans: evaluation to enhance learning outcomes and to foster conservation action.* Environmental Education Research, 19 (6), 823–843. DOI: https://doi.org/10.1080/13504622.2012.763112 .

Powell-Wiley, T. M., Wong, M. S., Adu-Brimpong, J., Brown, S. T., Hertenstein, D. L., Zenkov, E., Ferguson, M.C., Thomas, S., Sampson, D., Ahuja, C., Rivers, J. & Lee, B.Y., 2017. *Simulating the impact of crime on African American women's physical activity and obesity*. Obesity, 25(12), 2149–2155. DOI: https://doi.org/10.1002/oby.22040.

Rafieian, M., Masoudirad, M., Rezaee, M., & Masoudirad, M., 2014. *Assessment of residents satisfaction from the residential quality of Mehr housing (case study: Mehrshahr of Zahedan).* Geography and urban-region Logistics, 12, 135-150. DOI: https://doi.org/20.1001.1.23452277.1393.4.12.11.7

Rahimi, A., 2016**.** *A methodological approach to urban land-use change modeling using infill development pattern—a case study in Tabriz, Iran.* Ecological Processes, 5, 1. https://doi.org/10.1186/s13717-016-0044-6.

Rahimi, A., Vaez, M., Mohamadi, H., & Bakooyi, M., 2018. *Evaluation of Gender Justice in Urban Public Spaces (A Case Study: Tabriz City Center)*. Women and Society, 9(35), 219–244. DOI: https://doi.org/20.1001.1.22516735.1398.9.34.9.4

Rahimi, A., Tarashkar, M., Jahantab, B., 2021. *Contribution of Design Indicators in Perception of Social Capital, and Interference of Socio-Demographic Information in the Process.* Sustainability, 13, 3589. DOI: https://doi.org/10.3390/su13073589.

Raymond, C.M., Gottwald, S., Kuoppa, J., & Kyttä, M., 2016. *Integrating multiple elements of environmental justice into urban blue space planning using public participation geographic information systems.* Landscape and Urban Planning, 153, 198–208. DOI: https://doi.org/10.1016/j.landurbplan.2016.05.005.

Rigolon, A., 2016. *A complex landscape of inequity in access to urban parks: A literature review*. Landscape and Urban Planning, 153, 160–169. DOI: https://doi.org/10.1016/j.landurbplan.2016.05.017.

Roberts, H., Kellar, I., Conner, M., Gidlow, C., Kelly, B., Nieuwenhuijsen, M., McEachan, R., 2019. *Associations between park features, park satisfaction and park use in a multi-ethnic deprived urban area*. Urban Forestry & Urban Greening, 46, 26485. DOI: https://doi.org/10.1016/j.ufug.2019.126485.

Rodriguez-Valencia, A., Barrero, G. A., Ortiz-Ramirez, H. A., & Vallejo-Borda, J. A., 2020. *Power of user perception on pedestrian quality of service*. Transportation Research Record: Journal of the Transportation Research Board, 1–9. DOI: https://doi.org/10.1177/0361198120914611 .

Ruiter, R. A., Abraham, C., & Kok, G., 2001. *Scary warnings and rational precautions: A review of the psychology of fear appeals.* Psychology and health, 16(6), 613-630. DOI: https://doi.org/10.1080/08870440108405863.

Sakhaeifar, A., & Ghoddusifar, F., 2016. *Impact of Location-Behavior on Sense of Belonging to Place*. Modern Applied Science, 10(5), 57-66. DOI: https://doi.org/10.5539/mas.v10n5p57.

Sallis, J. F., Floyd, M. F., Rodríguez, D. A., & Saelens, B. E., 2012. *Role of built environments in physical activity, obesity, and cardiovascular disease*. Circulation, 125(5), 729 -737. DOI: https://doi.org/10.1161/circulationaha.110.969022.

Sarkar, C., Webster, C., & Gallacher, J., 2018. *Residential greenness and prevalence of major depressive disorders: A cross-sectional, observational, associational study of 94 879 adult UK Biobank participants.* The Lancet Planetary Health, 2(4), e162–e173. DOI: https://doi.org/10.1016/s2542-5196(18)30051-2.

Shaffer, G. S., & Anderson, L. M., 1985. *Perceptions of the security and attractiveness of urban parking lots*. Journal of Environmental Psychology, 5(4), 311-323. DOI: https://doi.org/10.1016/s0272-4944(85)80001-3.

Sickler, J., & Fraser, J., 2009. *Enjoyment in zoos*. Leisure Studies, 28 (3), 313–331.

Sreetheran, M., & Van Den Bosch, C. C. K., 2014. *A socio-ecological exploration of fear of crime in urban green spaces–a systematic review*. Urban Forestry & Urban Greening, 3(1), 1–18. DOI: https://doi.org/10.1016/j.ufug.2013.11.006.

Steele, F., 1981. *The sense of place*. CBI Publishing Company, Inc.

Sun, S., Xu, X., Lao, Z., Liu, W., Li., Z., García, E. H., He, L., & Zhu, J., 2017. *Evaluating the impact of urban green space and landscape design parameters on thermal comfort in hot summer by numerical simulation*. Building and Environment, 123, 277-288. DOI: https://doi.org/10.1016/j.buildenv.2017.07.010.

Tarashkar. M., Hami, A., & Emami Namin, F., 2020. *The Effects of Parks' Landscape Characteristics on Women's Perceptual Preferences in Semi-arid environments*. Journal of Arid Environments, 174, 104080. DOI: https://doi.org/10.1016/j.jaridenv.2019.104080.

van den Bosch, M., & Sang, Å. O., 2017. *Urban natural environments as nature-based solutions for improved public health–a systematic review of reviews*. Environmental Research, 158, 373–384. DOI: https://doi.org/10.1016/j.envres.2017.05.040.

van Gelder, J. L., 2015. *Tenure security as a predictor of housing investment in low-income settlements: testing a tripartite mode*l. Environment and Planning, 47, 485–500. DOI: https://doi.org/10.1068/a130151p.

Vaughan, K. B., Kaczynski, A. T., Wilhelm Stanis, S. A., Besenyi, G. M., Bergstrom, R., & Heinrich, K. M., 2013. *Exploring the distribution of park availability, features, and quality across Kansas City, Missouri by income and race/ethnicity: An environmental justice investigation*. Annals of Behavioral Medicine, 45(Suppl. 1), S28–S38. DOI: https://doi.org/10.1007/s12160-012-9425-y.

Walton, G. M., & Brady, S. T., 2017. The many questions of belonging. In A. Elliot, C. Dweck, & D. Yeager (Eds.). Handbook of competence and motivation (2nd edition): Theory and application (pp. 272–293). New York: Guilford Press.

Warr, M., 1990. *Dangerous Situation: Social Context and Fear of Victimization*. Social Forces, 68, 891-907. DOI: https://doi.org/10.2307/2579359.

Williams, D. R., & Patterson, M. E., 2008. Place, leisure and well-being. In *Sense of place, health and quality of life*. Eyles, J., & Williams, A., eds. Hampshire: Ashgate Publishing.

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. DOI: https://doi.org/10.1016/j.landurbplan.2014.01.017.

Zwierzchowska, I., Hof, A., Iojă, I. C., Mueller, C., Poniży, L., Breuste, J., & Mizgajski, A., 2018. *Multi-scale assessment of cultural ecosystem services of parks in Central European cities*. Urban Forestry & Urban Greening, 30, 84-97. DOI: https://doi.org/10.1016/j.ufug.2017.12.017

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