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Analysis of Nazilli (Aydin) City Open-Green Spaces Adequacy

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Abstract
Urban open-green spaces are for cities; these are areas that make significant contributions to ecological, social, cultural, economic, and psychological issues. Because of the expanding of urban areas with the increasing population, all city dwellers need open-green spaces.
The increase in the quality of urban life depends on the preservation of the existing open-green spaces in the cities and the increase of open-green spaces in parallel with the increase in the density of buildings. Here, unlike the open-increasing population and unplanned urbanization nature and green spaces in cities in Turkey decreased in quantity; Such important areas for cities and city dwellers are almost in danger of extinction.
The purpose of this research is; determining the adequacy of open-green spaces per capita in the city of Nazilli (Aydin), and making suggestions for the development of open-green spaces in the neighborhood and city scale. In the research, 51 parks in 19 neighborhoods were examined.
As a result of the research; It has been determined that there are imbalances in terms of numerical, spatial and per capita size in the distribution of open-green spaces among the neighborhoods in the city of Nazilli. It can be said that the reason for the unbalanced distribution of open-green spaces is that these areas are planned without taking into account the population of the neighborhood, surface measurements and population densities. In Kurtulus, Turan and Yesilyurt Neighborhoods, where there are no open-green spaces, open-green spaces should be planned. In neighborhoods where the open-green space standard per capita (10 m^2) is not met, the open-green spaces should be increased numerically and spatially.
Ensuring the adequacy of open green space per capita in all provinces and the city of Nazilli in Turkey; it will make cities more livable and increase the quality of life in cities.

Keywords: Open-green space, Standard, Population density, City, Quality of life, Nazilli.

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1. Introduction

Cities that coexist with the natural and cultural environment are experiencing a rapid change process with the changing needs of our age and strong technological interventions (Yılmaz and Özer, 1997). While urbanization offers social and cultural benefits for people on the one hand; It creates an obligation to live in an artificial and unhealthy environment. The urbanization rate in recent years in Turkey has increased compared to previous years (Önder and Polat, 2012).
With the industrialization of the cities, the need for nature of the citizen's increases, the open-green spaces are decreasing and the connection between people and nature breaks. People who move away from nature are left with mental, social, and physical problems in a monotonous life because of spatial growth, which results from urbanization (Önal and Sağır, 2018).
Today, people living in cities have difficulties in coping with stress, anxiety, and fatigue. Individuals

living among the rising structures feel the need to be alone with nature to get away from these feelings. For this reason, the demand for open-green spaces in cities is increasing (Sirina et al., 2017).

Open-green spaces have an important effect in balancing the relationship between people and nature and improving living conditions in cities. For this reason, the quality and quantity of open-green spaces in developed countries are accepted as an indicator of civilization and quality of life. In this context, many developed countries have aimed to meet the mental and physical needs of people by tending towards planning and creating an urban space or ecology suitable for human life (Emür and Onsekiz, 2007).

Systematic analysis of the current situation of open-green spaces in cities as a basis for spatial planning; It is of great importance to make predictions for the future based on concrete and tangible data (Coşkun Hepcan and Hepcan, 2018).

Open-green spaces are a long-term balance element for various uses in a city, and they are a living and sustaining organism that creates various possibilities for versatile outdoor uses. It contains openings other than architectural structures within the urban texture, keeps the development of the city under control, undertakes to unify and separating functions, ensures the integrity of the city and apart from all these, the city has; It is a set of systems that offer many contributions, ecological, aesthetic, recreational and economic (Öztan, 1991).

Open-green spaces are a key factor in human life, especially in urban areas with tall building and population density (Jim and Chen, 2003). Open-green spaces provide important ecosystem services by improving air quality in cities (Xing and Brimblecombe, 2019) and reducing thermal areas (Bowler et al., 2010; Liu et al., 2014). Also, it provides city residents with opportunities to interact with nature, encourages their participation in outdoor activities, and improves physiological and psychological health (Hartig et al., 2014; Zhang et al., 2020).

Urban open-green spaces are divided into active and passive open-green spaces according to their usage patterns. Parks, picnic areas, sports and children's playgrounds, botanical and zoo gardens are evaluated within active open-green spaces. Passive open-green spaces include areas such as cemeteries that are not actively used for various reasons (Atabeyoğlu and Bulut, 2012). Urban open-green spaces are classified into 3 groups according to the usage situation as public (general), semi-private and private areas (Önder, 1997). The open-green spaces in the city are divided into four groups depending on the city unit they serve: residence (building) level, neighborhood level, district level, and city-level (Gül and Küçük, 2001).

One of the open-green spaces in the cities, parks; in improving urban texture and air quality with dense vegetation (Parsons et al., 2015), regulating microclimate (Finaeva, 2017), reducing urban heat island effect (Tzoulas et al., 2007; Roy et al., 2012; Lafortezza et al., 2013; Demuzere et al., 2014) and it has important effects in supporting biological diversity. Besides these, parks are gathering areas in natural disasters such as earthquakes (Jayakody et al., 2018). They are important for recreation, physical and mental restoration (Chiesura, 2004; Konijnendijk et al., 2013; Strum and Cohen, 2014). They also play important roles in maintaining social interactions (Peters et al., 2010) and improving (Kazmierczak and James, 2007). Research conducted in urban parks in different cities such as New York (Sutton and Anderson, 2016), Singapore (Henderson, 2013), Tokyo (Kohsaka and Okumura, 2014), and Delhi (Paul and Nagendra, 2017) revealed the importance of parks. The importance of open-green spaces and parks has been better understood during the COVID-19 pandemic (Slater et al., 2020).

The open-green space standard is expressed as the square meter size of open-green spaces per capita, that is, the total population of the city is divided into the areas with green texture (Türkan, 2009). Giving the green space sizes per capita in square meters is based on the assumption that the green spaces are distributed within the whole settlement texture (Yıldızcı, 1991).

Sessoms (1964), in his research; states that the determination of standards for open spaces depends on population density, population distribution, population characteristics, type of recreation (daily, weekly) (Çinçinoğlu, 2001).

The decrease in open-green spaces and the rapid increase in urban population results in the decrease of urban public open-green spaces per capita, which leads to a decrease in the quality of the urban landscape (Chaudhry et al., 2011; Sherbinin et al., 2007). The World Health Organization (WHO) has determined a limit value of at least 9 m^2 per capita for open-green space in cities for healthy living (Kuchelmeister, 1998). The minimum limit for open-green spaces per capita is 30 m^2 for the United Nations (UN) and 26 m^2 for the European Union (EU). However, researches did not give a specific limit value for open-green space per capita (Khalil, 2014; Kurban, 2017; Li and Pussella, 2017; Singh et al., 2010).

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The size and distribution of green spaces vary depending on the population, social structure of the urban population, and settlements. Today, the population factor is the most effective among the methods used in determining green space adequacy. The size of green spaces per capita green space to determine standards in Turkey is also important (Gedikli, 1998).
In our country, first, the norm of 4 m^2 of green spaces (groves, meadows, lakes, and playgrounds) per capita was proposed in the city planning plans between 1933-1956 with the Municipal Building and Roads Law No. 2290. This provision was abolished with the Building Code, which entered force in 1956, and it was tried to be planned with the planer's work and acceptance. In Article 28 of the Building Code No. 6785/1605, a minimum of 7 m^2 per capita is foreseen for open-green spaces, and playgrounds and playgrounds at the neighborhood level (3-6 years old and 7-11 years old) 1.5 m^2; game and sports areas at the neighborhood level (11-18 ages) 2 m^2, neighborhood parks 1 m^2; At the city level, the district stadium is 1 m^2, city parks are 1.5 m^2. In the Building Code published in the Official Gazette dated 14 June 2014 and numbered 29030, the required open-green space size per capita was determined as 10 m^2.
In the study, the qualifications of the open-green spaces in the city of Nazilli (Aydin) in the neighborhood and the whole city were examined, suggestions were made for the protection and development of open-green spaces and increasing the size of open-green spaces per capita.

2. Material and Methods

2.1 Study Area

The study area comprises the parks in 19 neighborhoods in the city of Nazilli (Aydin) (Figure 1). Nazilli (160,877); is the district with the highest population in Aydin province after Efeler (292,716). Aydin-Denizli Highway (E-87 Highway) is on the İzmir-Denizli railway, 45 km from Efeler district and 81 km from Denizli. It is between latitudes 28'-29 and longitudes 37'-38. Kuyucak borders Nazilli in the east, Sultanhisar in the west, Yenipazar in the southwest, Alaşehir district of Manisa in the northeast, Bozdoğan in the south, and Karacasu in the southeast. The population of Nazilli city in 2020 is 121,731.

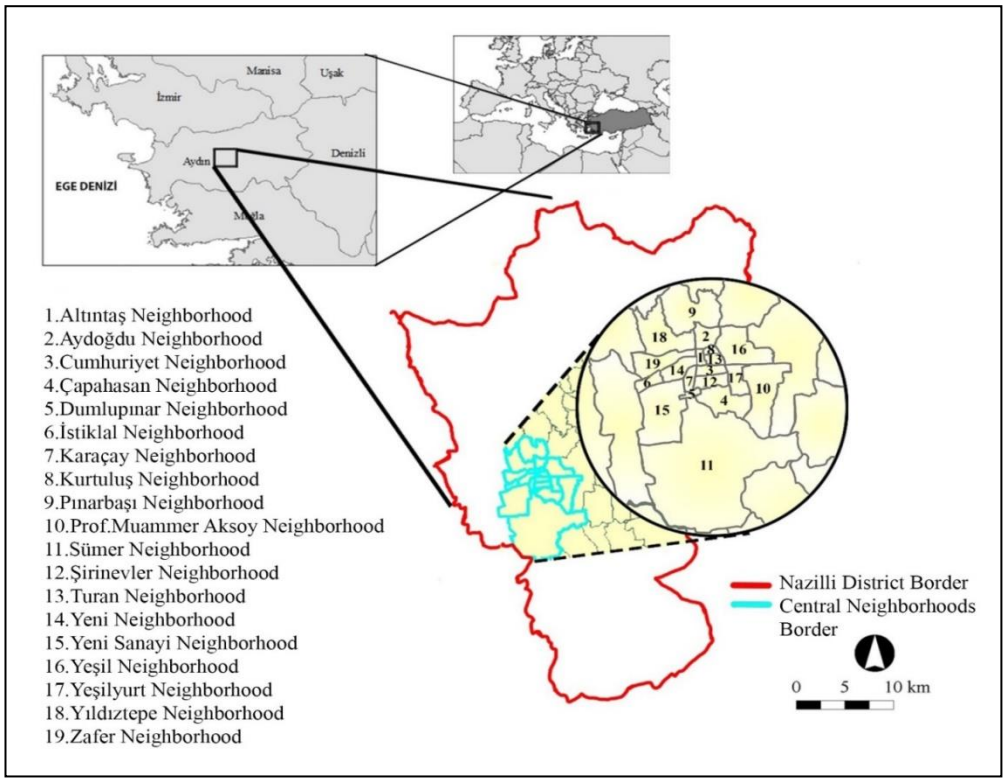

Figure 1. Study area.

2.2 Data Analysis

The research materials comprise written and visual literature, Nazilli development plan, district and neighborhood boundaries map, photographs taken in the area, and computer software. The research

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method comprises seven stages (Figure 2). Urban open-green spaces in the city of Nazilli were determined using the 1/5,000 scale Master Development Plan and Google Earth software; Using Adobe Photoshop CC 2017, ArcMap 10.5, and Autocad 2021 software, the sizes of the open-green spaces were calculated and maps were created. Population data for the study area [December 31, 2020 Address Based Population Registration System (ABPRS) results] TSI (Turkey Statistical Institute) above were obtained (TUIK, 2020). The size of open-green spaces per capita in the neighborhood and city scale has been evaluated according to the Regulation on Spatial Plans Construction No. 29030 of the Building Code No. 3194.

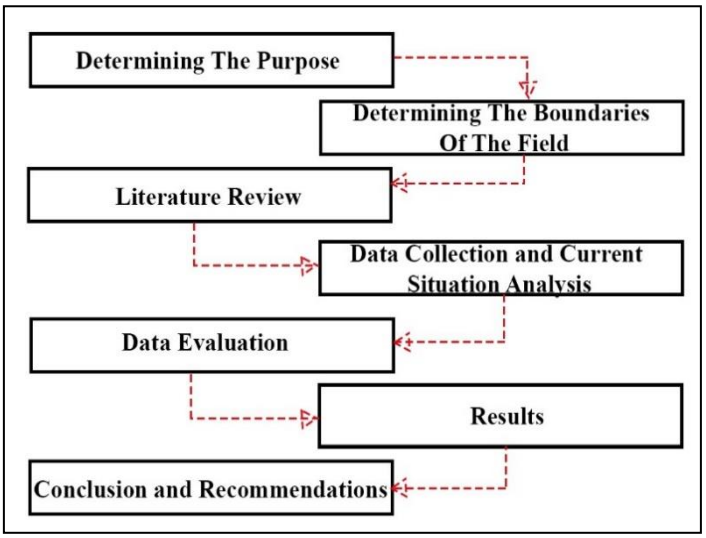

Figure 2. Method flow chart.

3. Results

In Yıldıztepe Neighborhood, which has the highest population (18,745), the size of the open-green space per capita was determined as 1.32 m^2. In the Zafer Neighborhood, which has the second-highest population (14,408) in the city of Nazilli, there is 0.61 m^2 open-green space per capita. In Dumlupınar Neighborhood, which has the lowest population (1,237 people), the open-green space size per capita is calculated as 2.37 m^2. While Sümer Neighborhood has the most hundred measurements (20.27 km^2), Kurtuluş Neighborhood has the least hundred measurements (0.17 km^2). The neighborhood with the highest population density (19,423.53 people / km^2) is Kurtuluş Neighborhood, while the neighborhood with the lowest population density (199.75 people / km^2) is the Sümer Neighborhood. The three neighborhoods with six parks and the highest number of parks are Sümer Mahallesi, Yeni Mahalle, and Yıldıztepe Neighborhood. Karaçay and Prof. While there is only 1 park in Muammer Aksoy Neighborhoods, there are no parks in Kurtuluş, Turan, and Yeşilyurt Neighborhoods. The neighborhood with the most open-green space (193,901.95 m^2) is the Sümer Neighborhood. Green Mahalle (36,692.62 m^2) and Yeni Mahalle (34,449 m^2) follow the Sümer Neighborhood in terms of the size of the open green space. The neighborhood with the least open-green space (705.53 m^2) is Karaçay Neighborhood. While the neighborhood with the highest coverage rate of open-green spaces is Altıntaş Neighborhood with 4.50%, the neighborhood with the lowest rate is Prof. It is Muammer Aksoy Neighborhood. Sümer Mahallesi is the neighborhood with the highest open-green space per capita with 47.89 m^2. Sümer Neighborhood is followed by Yeni Sanayi Mahallesi (13.08 m^2) and Pınarbaşı Neighborhood (5.17 m^2) in terms of open-green space per capita. Karaçay Mahallesi is the neighborhood with the lowest open-green space (0.20 m^2) per capita. Prof. In Muammer Aksoy (0.46 m^2), Zafer (0.61 m^2), and Şirinevler (0.83 m^2) Neighborhoods, the size of open-green spaces per capita is less than 1 m^2. There are 51 open-green spaces in 19 neighborhoods in the city of Nazilli. The size of open-green spaces in the city is 405,207.92 m^2, the ratio of open-green spaces to urban surface space is 0.87%, and the size of open-green spaces per capita is 3.33 m^2 (Table 1).

Table 1. Population and spatial data of Nazilli city neighborhoods

NBHD	POP	AN (km^2)	PD ($kişi/km^2$)	NP	OGS (m^2)	NOGSR (%)	OGS Per Capita (m^2)
Altıntaş	2,945	0.24	12,270.83	2	10,586	**4.50**	3.59
Aydoğdu	6,465	0.82	7,884.15	5	11,964.60	1.45	1.85
Cumhuriyet	7,271	0.50	14,542	2	19,351	3.87	2.66
Çapahasan	3,576	1.98	1,806.06	2	5,594.22	0.28	1.56
Dumlupınar	**1,237**	0.20	6,185	2	2,937	1.46	2.37
İstiklal	2,022	0.50	4,044	2	3,016	0.60	1.49
Karaçay	3,459	0.40	8,647.50	**1**	**705.53**	0.18	**0.20**
Kurtuluş	3,302	**0.17**	**19,423.53**	-	-	-	-
Pınarbaşı	5,405	3.65	1,480.82	4	27,938	0.76	5.17
Prof. Muammer Aksoy	4,906	3.50	1,401.71	**1**	2,233	**0.06**	0.46
Sümer	4,049	**20.27**	**199.75**	**6**	**193,901.95**	0.96	**47.89**
Şirinevler	5,811	0.72	8,070.83	2	4,803	0.67	0.83
Turan	6,113	0.34	17,979.41	-	-	-	-
Yeni	13,693	0.90	15,214.44	**6**	34,449	3.81	**2.52**
Yeni Sanayi	1,347	4.28	314.72	3	17,620	0.41	13.08
Yeşil	14,239	2.55	5,583.92	4	36,692.62	1.44	2.58
Yeşilyurt	2,738	0.88	3,111.36	-	-	-	-
Yıldıztepe	**18,745**	2.96	6,332.77	**6**	24,651	0.83	1.32
Zafer	14,408	1.58	9,118.99	3	8,765	0.55	0.61
TOTAL	121,731	46.44	2,621.25	51	405,207.92	0.87	3.33

NBHD: Neigborhoods; POP: Population; AN: Area of Neighborhood; PD: Population Density; NP: Number of Parks; OGS: Open-Green Spaces; NOGSR: Neighborhood Open-Green Space Ratio.

The biggest park in Yıldıztepe Neighborhood is Şehit Mehmet Dinek Sports Park with 5,084 m^2, while the smallest park is Rauf Denktaş Park with 2,112 m^2. Among the 3 parks in the Zafer Neighborhood, the largest park (3,527 m^2) is Yunus Emre Park, while the smallest park (1,834 m^2) is the Children's Park. It has Şehit Mehmet Işılakça Park (1,655 m^2) and Ottoman Park (1,282 m^2) in Dumlupınar Neighborhood. The biggest park in the Sümer Neighborhood (186,534 m^2) is the Sümer park, while the smallest park (935.24 m^2) is the Martyr Süleyman Çelebi Park. In Yeni Mahalle, the largest park (18,322 m^2) is Atatürk Park, the smallest park (1,138 m^2) is Şehit Hidayet Erçelik Park (Table 2, Figure 3).

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Table 2. Open-green space sizes of Nazilli city neighborhoods

Neighborhoods	**Parks**	**Area (m^2)**
Altıntaş	1-Şehit Mehmet Keskin	1,380
	2-Uğur Mumcu	9,206
Aydoğdu	1-Şehit Ali Günay	1,254
	2-Şehit Osman Zengin	891.60
	3-Aydoğdu	4,756
	4-Şehit Cengiz Kır	2,397
	5-Şehit Metin Aydemir	2,666
Cumhuriyet	1-Leylekli	1,575
	2-Cumhuriyet	17,776
Çapahasan	1-Çocuk Parkı	903.22
	2-Şehit Cengiz Toklu	4,691
Dumlupınar	1-Osmanlı	1,282
	2-Şehit Mehmet Işılakça	1,655
İstiklal	1-Çocuk Parkı	1,757
	2-Adsız Park	1,259
Karaçay	1-Arap Hafız Madran	705.53
Kurtuluş	-	-
Pınarbaşı	1-Şehit Önder Ayıklar (Şelale)	7,787
	2-Hüsnü Kutsal	15,003
	3-Çocuk Parkı	2,853
	4-Şehit Hasan Kadınhanlı	2,295
Prof. Muammer Aksoy	1-Çocuk Parkı	2,233
Sümer	1-Şehit Erdal Doyran	2,438
	2-Şehit Süleyman Çelebi	935.24
	3-Barış ve Kardeşlik	1,642
	4-Sümer	186,534
	5-Şehit Hikmet Kılınç	703.71
	6-Aşiti	1,649
Şirinevler	1-Kuvayı Milliye	1,741
	2-Karabağ	3,062
Turan	-	-
Yeni	1-23 Nisan	9,523
	2-Atatürk	18,322
	3-Şehit Hidayet Erçelik	1,138
	4-Şehit Celalettin Bala	1,874
	5-Hacılar	1,846
	6-Şehit Mehmet Körpe	1,746
Yeni Sanayi	1-Turunç	7,996
	2-Adsız Park	7,934
	3-Çocuk Parkı	1,690
Yeşil	1-Adsız Park	797.62
	2-Semt	4,521
	3-Şehitler	25,073
	4-Mustafa Altuğ Sözen	6,301
Yeşilyurt	-	-
Yıldıztepe	1-15 Temmuz Şehitler	3,957
	2-Rauf Denktaş	2,112
	3-Botanik	5,002
	4-Şehit Mehmet Dinek Spor	5,084
	5-Çocuk Parkı	4,004
	6-Ahmet Şensan	4,492
Zafer	1-Çocuk Parkı	1,834
	2-Yunus Emre	3,527
	3-Çocuk Parkı	3,404


Altıntaş Neighborhood
1-Şehit Mehmet Keskin Park
2-Uğur Mumcu Park
Open-Green Spaces
0 50 100 200 300 400 500 m
Aydoğdu Neighborhood
1-Şehit Ali Günay Park
2-Şehit Osman Zengin Park
3-Aydoğdu Park
4-Şehit Cengiz Kır Park
5-Şehit Metin Aydemir Park
Open-Green Spaces
0 0,5 1 km
Cumhuriyet Neighborhood
1-Leylekli Park
2-Cumhuriyet Park
Open-Green Spaces
0 0,5 1 km
Çapahasan Neighborhood
1-Çocuk Park
2-Şehit Cengiz Toklu Park
Open-Green Spaces
0 0,5 1 km
Dumlupınar Neighborhood
1-Osmanlı Park
2-Şehit Mehmet Işılakça Park
Open-Green Spaces
0 50 100 200 300 400 500 m
İstiklal Neighborhood
1-Çocuk Park
2-Adsız Park
Open-Green Spaces
0 0,5 1 km
Karaçay Neighborhood
1-Arap Hafız Madran Park
Open-Green Spaces
0 0,5 1 km
Kurtuluş Neighborhood
No park
Open-Green Spaces
0 50 100 200 300 400 500 m
Pınarbaşı Neighborhood
1-Şehit Önder Ayıklar Park
2-Hüsnü Kutsal Park
3-Çocuk Park
4-Şehit Hasan Kadınhanlı Park
Open-Green Spaces
0 0,5 1 km
Prof.Muammer Aksoy Neighborhood
1-Çocuk Park
Open-Green Spaces
0 0,5 1 km
Sümer Neighborhood
1-Şehit Erdal Doyran Park
2-Şehit Süleyman Çelebi Park
3-Barış ve Kardeşlik Park
4-Sümer Park
5-Şehit Hikmet Kılınç Park
6-Aşiti Park
Open-Green Spaces
0 0,5 1 km
Şirinevler Neighborhood
1-Kuvayı Milliye Park
2-Karabağ Park
Open-Green Spaces
0 0,5 1 km

Figure 3. Open-green spaces of Nazilli city according to neighborhoods

The largest open-green space in the city (186,534 m^2) is Sümer Park in Sümer Neighborhood, the smallest open-green space (703.71 m^2) is Şehit Hikmet Kılınç Park in Sümer Neighborhood (Figure 4).

Figure 4. The biggest [Sumer Park (a)] and the smallest [Martyr Hikmet Kılınç Park (b)] open-green spaces of Nazilli city.

A significant positive correlation was found between the size of open-green spaces per capita and the number of parks (p = 0.001), the size of open-green spaces (p = 0.000), and the coverage ratio of open-green spaces in the neighborhood (p = 0.000). Considering the correlation coefficients, there is a moderate relationship between the size of open-green spaces per capita and the number of parks and the coverage ratio of open-green spaces in the neighborhood, and a high level of relationship with the size of open-green spaces. If the number of parks in the neighborhoods, the size of open-green spaces, and the coverage ratio of open-green spaces are increased, the size of open-green spaces per capita will increase. No significant relationship was found between the size of open-green spaces per capita and population, neighborhood area, and population density (Table 3).

Table 3. Spearman's Rho results showing the relationship between open-green space size per capita and spatial data

Spatial Data	**N**	**r**	***p***
Population	19	-0.025	0.920
Area of Neighborhood (km^2)		0.436	0.062
Population Density (person/km^2)		-0.388	0.100
Number of Parks		0.690	0.001*
Open-Green Spaces (m^2)		0.831	0.000*
Neighborhood Open-Green Space Ratio (%)		0.731	0.000*

*p; Confidence Interval and * <0.01; N: Sample Size; r: Correlation Coefficient.

According to the correlation test results showing the relationship between spatial data (Table 4), a positive and weak significant variance was found between the population in the neighborhoods and the number of parks (p = 0.037), and the size of open-green spaces (p = 0.042). Among the most important findings, there is a positive and moderately significant relationship between the space of the neighborhood and the number of parks (p = 0.007), and the size of open-green spaces (p = 0.005). As the area of the neighborhoods increases, the number of parks and the size of open-green spaces increases significantly. Also, as the space of the neighborhood increases, the population density decreases significantly (p = 0.000). This situation shows that the population distribution among the neighborhoods is not homogeneous. Also, no significant relationship was found between population density and other spatial data. There is a significant positive variance between the number of parks and the size of open-green spaces (p = 0.000), and the ratio of open-green spaces in the neighborhoods (p = 0.003). As the number of parks increases, the size of open-green spaces increases, showing that the neighborhoods are more in number with fewer areas than they are in small numbers with high spaces. There is a significant positive correlation between the size of the light-green spaces and the coverage ratio of the light-green areas in the neighborhoods (p = 0.001).

Table 4. Spearman's Rho shows the relationship between the spatial data itself

	POP		**AN (km^2)**		**PD (person/km^2)**		**NP**		**OGS (m^2)**	
	r	*p*	r	*p*	r	*p*	r	*p*	r	*p*
AN (km^2)	0.284	0.238	1	-						
PD (person/km^2)	0.321	0.18	-0.743	0.000*	1	-				
NP	0.481	0.037**	0.599	0.007*	-0.258	0.286	1	-		
OGS (m^2)	0.471	0.042**	0.618	0.005*	-0.264	0.275	0.916	0.000*	1	-
NOGSR (%)	0.248	0.306	-0.008	0.974	0.109	0.657	0.649	0.003*	0.706	0.001*

*p; Confidence Interval and * <0.01; ** <0.05; r: Correlation Coefficient; POP: Population; AN: Area of Neighborhood; PD: Population Density; NP: Number of Parks; OGS: Open-Green Spaces; NOGSR: Neighborhood Open-Green Space Ratio.

4. Discussion and Conclusion

Sümer Neighborhood has an open-green space per capita (47.89 m^2), which is five times larger than the 10 m^2 open-green space per capita specified in the Regulation on Spatial Plans Construction No. 29030 of the Building Code No. 3194. The most important reasons for this situation are that the Sümer neighborhood is one of the three neighborhoods with the highest number of open-green spaces in the city, it is the neighborhood with the highest number of open-green spaces in the city, and the city's largest open-green space, the Sümer Park, is in the neighborhood. Other important reasons are; Although it is the neighborhood with the most hundred measurements, its population is lower than most of the neighborhoods and it is the neighborhood with the lowest population density. Sümer Park hosts many space uses (amusement park, zoo, children's playgrounds, cafe-restaurants, jogging-walking paths, picnic areas, wedding, etc. celebration places, dry pools) that serve different users in terms of age, gender, and socio-economic aspects.

Along with the Sümer Neighborhood, the neighborhood with an open green space (13.08 m^2) larger than 10 m^2 open-green space per capita specified in the Regulation on Spatial Plans Construction No. 29030 of the Building Code No. 3194 is the New Industrial Neighborhood. The most important reason for this result is that the neighborhood has the second-lowest population density in the city.

Güneş Atıl et al. (2006), in their research on the adequacy of the public green spaces of Bayındır district, found the open green spaces in Bayındır district center as 219,937 m² and the open-green space per capita as 13.86 m². With this value, they stated the Bayındır district center meets the 10 m² open-green space standard per capita specified in the Building Code.

Although Yeni Mahalle and Yıldıztepe Neighborhoods have the same number of parks as the Sümer neighborhood, the open-green space sizes (2.52 m^2 and 1.32 m^2) per capita in the neighborhoods are far below the 10 m^2 specified in the regulation. The most important reason for this is that although the populations of Yeni Mahalle and Yıldıztepe Neighborhoods are three / five times higher than the population of the Sümer Neighborhood and seventy-six / thirty-two times the population density, the surface measurements are twenty-three / seven times the size of the open green space. that is about six / eight times less. This result reveals the imbalance in the distribution of open-green spaces among the neighborhoods in the city of Nazilli.

Yücekaya and Kocatürk (2017); In their research in the city of Kilis, they found that parks and green spaces do not show a balanced distribution within the urban macro form. While intense park distribution is observed in some parts of the city, they have observed that there are very few parks in some areas. Although a more intense use of open-green spaces is foreseen in the development plans for development housing areas, they stated that the size of open-green spaces per capita in Kilis city is 3.71 m^2, and this value is far below the 10 m^2 green space standard specified in the development legislation. In the new development plans, it is recommended to increase the size of the open-green space to at least 10 m^2 in the entire city and to comply with the plan decisions.

The reasons for the size of open-green spaces per capita below 1 m^2 in Karaçay (0.20 m^2), Prof. Muammer Aksoy (0.46 m^2), Zafer (0.61 m^2) and Şirinevler (0.83 m^2) Neighborhoods; The number of open-green spaces (there is 1 park in two neighborhoods, 2 in a neighborhood and 3 in a neighborhood) and the size of open-green spaces is very low compared to their population. The reason for the unbalanced distribution of open-green spaces in the city of Nazilli among the neighborhoods in terms of numerical and spatial; It can be said that it is planned without considering the population of the neighborhood, surface measurements, and population densities.

Ulu Akşit et al. (2020) identified an open-green space of 8.4 m^2 per capita in their research in the city of Burdur. According to this result, they stated that the city of Burdur is insufficient in terms of active green spaces. They also concluded that the open-green spaces available in the city of Burdur have an irregular distribution. They made suggestions to ensure the adequacy of open-green spaces in terms of balanced distribution in the city, location, size, and accessibility, and to create usage conditions for the city people.

Another important result is; It means that there are no parks in Kurtuluş, Turan, and Yeşilyurt Neighborhoods. This result shows that 12,153 people living in these three neighborhoods are deprived of open-green spaces. That there are no open-green spaces in the three neighborhoods reveals the imbalance in the distribution of open-green spaces among the neighborhoods in the city of Nazilli, but it also reduces the average open-green space per capita in the city. In the development plan, very urgent open-green spaces should be suggested for these neighborhoods.

The coverage rate of open-green spaces in the city of Nazilli is 0.87%. Besides this very low rate, there are imbalances in the distribution of open-green spaces in the city among neighborhoods. In all

neighborhoods except Sümer Neighborhood (47.89 m^2) and Yeni Sanayi Mahallesi (13.08 m^2) and the entire city of Nazilli (3.33 m^2) open-green space size per capita, It does not meet the 10 m^2 / capita standard specified in the Apartment Regulation. To meet this standard in the neighborhoods and the entire city, open-green spaces should be suggested in Nazilli Development Plan studies.

In their research, in which the existence of urban green spaces was evaluated in the city's example of Niğde, Olgun and Yılmaz (2019) found that the active green space size of the city of Niğde could not provide the open-green space per capita specified in the legislation. To meet the 10 m² open-green space standard per capita stated in the legislation in the entire city; Planning of open-green spaces in neighborhoods with insufficient open-green spaces, implementation of the park areas suggested in the development plans, planning of parking areas in Alaaddin, Balhasan, Esenbey, Serili and Songur neighborhoods that do not have open-green spaces were suggested in the development plans. In their research, in which the existence of green spaces was evaluated in the city's example of Niğde, it was determined that the active green space size of the city of Niğde could not provide the open-green space per capita specified in the legislation. To meet the 10 m² open-green space standard per capita in the legislation in the entire city; In the development plans, suggestions were made to plan open-green spaces in neighborhoods with insufficient open-green spaces, implementing the park areas suggested in the development plans, and the planning of parking areas in Alaaddin, Balhasan, Esenbey, Serili and Songur neighborhoods that do not have open-green spaces.

Koçan and İbiş (2020) determined in their study in Çankırı that urban open-green spaces are 20.53% in the entire city. They determined that 4 m^2 open-green space per present capita did not meet the value of 10 m^2 / capita specified in the regulation. They stated that this value is 5.6 m^2 / capita together with the proposed open-green spaces, which is not enough to meet the standard.

Ülger and Önder (2006) stated in their research that they examined the open-green spaces of Kayseri city that the open-green space size per capita was 5.83 m^2, and this value did not meet the open-green space per capita in a settlement according to the Building Code No. 3194 they have done.

Shahfahad et al. (2019), in their research in New Delhi, the capital of India; determined that the city is the greenest metropolitan city of India with 22% open-green space and the open-green space per capita is 20 m^2. They found that the ratio of open-green spaces in other metropolitan cities such as Mumbai and Chennai is less than 10% (Chaudhry et al., 2011). According to the research findings, the open-green space per capita is 1.28 m^2 (HT, 2018) in Mumbai and 0.46 m^2 in Chennai (The Hindu, 2012). Open-green spaces per capita in Gandhinagar and Chandigarh cities were found to be 160 m^2 and 55 m^2, (Chaudhry et al., 2011; Gupta, et al., 2012). The most important reason why there is such a big difference between the sizes of open-green spaces per capita between cities; stated that there are deficiencies in open-green space planning and rapid-irregular urbanization. They revealed that the open-green space per capita is low because of the high population density and low open-green spaces in the northern region of New Delhi such as Seelampur, Shahdara regions, and Sadatpur. Contrary to this result, they found higher open-green spaces per capita in southern regions such as Patparganj, western regions such as Pandav Nagar, Anand Vihar, and eastern regions.

Keloğlu and Karabacak (2020) have revealed that the open green space per capita in Keçiören District, which is the second in terms of population and the first in terms of population density, is 5.2 m². Together with the open-green spaces in the planned areas, they determined that the open-green space per capita at the urban scale will be between 6.5 m^2-10 m^2, and that 9 neighborhoods will exceed the standard of 10 m^2 per capita at the neighborhood scale.

Garcia-Garcia et al. (2020), it has been calculated that there is 9.18 m^2 open green space per capita in Aluche region of Spain. However, they think that without large parks, the amount of open green space per capita has decreased to 6.15 m^2. They also saw that Aluche Park plays an important role in the city. Without this park, they concluded that 94% of the parks in the city had an area of less than 500 m^2. Also, the minimum levels offered by WHO (2012) are 42 m^2 per capita and 112 m^2 per residential block. This amount in the Tres Cantos neighborhood; They conclude that with 20.43 m^2 of open green space per capita, about half of them without large parks are sufficient. It represents 50.4% of the total cleanliness with large parks. And in the neighborhood of Salamanca, which they last studied; Seeing that the amount of open green space was 4.3%, they concluded that it had the lowest proportion of open green space per capita at 1.5 m^2. They attribute this to the existence of residential areas that cover more than half of the neighborhood.

Siddique et al. (2020) in their research in Asansol, India; Since more than half of the urban area (55.66%) is covered with vegetation, they found that the open-green space per capita is 44.76 m^2. However, they found that only 0.12% of the area covered with vegetation in the central region of

Asansol city reduced the size of open-green spaces per capita to 0.27 m^2. They stated that this value is far below international standards. They observed that there is a big difference between the city center and the surrounding area in the distribution of open-green spaces.
Vural (2020) in his research evaluating the use of green spaces and the adequacy of city parks in the city of Bingöl; determined that the size of the 22 parks he examined varied between 1,500 m^2 and 41,882 m^2. It has revealed that the total area size of these parks is 182,430 m^2 and that there is a 1.55 m^2 parking area per capita in the city. Similar results in studies related to the determination of the open-size green space per capita in different provinces of Turkey were obtained. In these studies, Gül and Küçük (2001) calculated an active green area of 3 m^2 for Isparta, 1.04 m^2 for Kastamonu (Öztürk and Özdemir, 2013), and 4.2 m^2 for for Antalya (Manavoğlu and Ortaçeşme, 2015). They concluded that the per capita open-green space sizes determined in these studies are far from the standards set by the regulation. Unlike developed countries, the average of these values is quite high in Turkey (Yenice, 2012). While Edinburgh (144.59 m^2), Espoo (140.00 m^2), and Vienna (125.44 m^2) are the first three cities with the highest values in terms of open-green spaces per capita with their open-green spaces, Jeddah (0.90 m^2), Buenos Aires (1.90 m^2) and Tokyo (3.00 m^2) are the three cities with the lowest values in terms of open-green space per capita (Baycan Levent and Nijkamp, 2004; Haq, 2011; Khalil, 2014).
Open-green spaces in the city of Nazilli; Considering the neighborhood populations, surface measurements, and population densities, it should be increased in terms of numerical, spatial, and per capita size, the open-green space size per capita should meet the 10 m^2 / capita standard specified in the Regulation on the Spatial Plans Construction No. 29030 of the Building Code No. 3194. To increase the size of open-green spaces per capita in Nazilli, the number of parks, the coverage ratio of open-green spaces in the neighborhoods, and the size of open-green spaces should be increased. The number of parks and open-green spaces should be increased not only in areas with large areas but also in small neighborhoods. There are many small parks in Nazilli. To reduce this fragmented structure in the parks, fewer large parks should be planned.
Ensuring the adequacy of open green space per capita in all provinces and the city of Nazilli in Turkey; It will enrich the cities' ecologically, increase the areas where the recreational needs of the inhabitants will be met, thus increasing the quality of life in the city.

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