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Original Research Article

Evaluating the Equity of Access to Urban Services: A Hybrid Spatial-Non-spatial Approach
(Case Study: Urmia City)

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Abstract

Problem statement: This research significantly emphasizes the importance of a two-pronged approach to accessing urban services. It demonstrates that a sole focus on spatial criteria (such as distance and density) without considering non-spatial dimensions (such as social equity, diverse user needs, and civil rights) cannot lead to an equitable distribution of urban services.

Research objective: The aim of this research is to present a new concept of access equity by integrating spatial and non-spatial methods.

Research method: This study utilized a hybrid approach (spatial and non-spatial) to explain the equity of access to urban services in the city of Urmia. The data analysis was conducted using GIS, GeoDa, and SPSS software.

Conclusion: The findings of this research indicate a significant difference between the spatial and non-spatial dimensions of access to urban services. With a correlation coefficient of 0. 51 between these two indicators, only 26% of the variations in non-spatial access are explained by spatial factors (spatial access). This result suggests that the individual and social characteristics of users (such as economic status, age, gender, and behavioral preferences), as well as the quality and suitability of the facilities, play a significant role in determining the level of equitable access—factors that are often overlooked in purely spatial analyses. These findings highlight the importance of considering both spatial and non-spatial aspects of access in urban planning.

Keywords: *Evaluation, Access Equity, Spatial Access, Non-spatial Access, Urmia City.*

Introduction

The concept of spatial justice is rooted in the nexus of two fundamental ideas: justice (ranging from a moral virtue to postmodern theories) (Sandel, 2007) and space (from a static concept to a medium for the reproduction of power structures) (Foucault, 1993). The evolution of this concept reflects a dynamic convergence of ideas across various disciplines (Bell, 2019; Dadashpoor & Sajadi, 2024). Although not explicitly addressed in ancient philosophical thought, the discussions of distributive justice by philosophers like Plato and Aristotle formed its theoretical foundations.

In the 20th century, spatial justice developed

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under the influence of Marx's socialist critiques of capitalist injustice and the Chicago School's studies on human ecology and urban heterogeneity. In the 1990s, feminist, post-colonial, and institutional approaches expanded the discourse on spatial justice from a sole focus on economics to areas such as identity, belonging, and race. The 2008 financial crisis was a turning point in the evolution of this discourse. This event reinforced the focus on decentralized models, local community participation, and distributive technologies (Dadashpoor & Dehgan, 2025). This concept now transcends the framework of resource distribution and has taken on a dynamic dimension; a process in which spatial organization and social values evolve simultaneously (Alvandipour & Dadashpoor, 2018).

One of the most important functions of spatial justice is to ensure equal access to public goods and services for all residents, regardless of their social or economic status (Chang et al., 2019; Dargahi & Shamloo, 2023).

Measuring the spatial justice of services is an effective tool for identifying deprived areas, evaluating the consequences of urban policies, and improving the allocation of public services (Smoyer Tomic et al., 2004). Over the past two decades, numerous studies have addressed the issue of access to urban services (Smith, 1994; Erkip, 1997; Talen & Anselin, 1998; Tsou et al., 2005; Omer, 2006; Landry & Chakraborty, 2009; Chang & Liao, 2011; Taleai et al., 2014). These studies have considered distributional inequalities as a reflection of urban processes that manifest in space and have emphasized the root causes of inequality in the distribution of public facilities.

In many of these studies, the access index has been considered as a measure of justice, assuming that inequalities are mainly due to the distance to services (Ottensmann, 1994; Kinman, 1999; Ogryczak,2000;Lindseyetal.,2001;Nicholls&Shafer,2001; Tsou et al., 2005; Omer, 2006; Lucas, 2012; Lucas & Jones, 2012; Lotfi & Koohsari, 2009). Accordingly, spatial justice is achieved when all citizens, regardless of their location or socioeconomic status, have the possibility of equal access to urban services within a specific time or distance (Liao et al., 2009; Nicholls & Shafer, 2001; Rahman & Neema, 2015).

However, what these studies have often overlooked is the non-spatial dimension of access to services. For example, a school may be spatially accessible, yet low-quality education or the lack of special facilities can diminish actual access. As Harvey (1973) emphasizes, the distribution of resources should not only be fair but also contribute to reducing structural inequalities among social groups.

Traditional studies have often neglected the qualitative dimensions of services. For example, a school may be spatially accessible, but the low quality of education or lack of special facilities can reduce actual access. As Harvey (ibid.) emphasizes, the distribution of resources must not only be fair but must also help reduce structural inequalities between social groups.

In recent years in Iran, the trend of privatizing public services has turned them into "economic goods" (Fayyazmanesh & Ranjbarki, 2017; Abdollahzadeh et al., 2021), a trend consistent with neoliberal logic that reduces public services from a civil right to a market commodity. As a result, a hierarchy of access is formed: high-income groups benefit from high-quality services, while low-income groups are limited to low-quality or informal state services.

From this perspective, the equal distribution of urban services does not necessarily mean access equity.

The current research attempts to take a step toward a more comprehensive understanding of spatial justice by comparing spatial and non-spatial approaches in evaluating access.

The research questions are as follows:

1) What is the pattern of spatial access to urban services in Urmia?

2) What is the pattern of non-spatial access to urban services in Urmia?

3) Is there a significant relationship between spatial and non-spatial access?

This mixed-method approach fills the gaps in traditional studies and allows for an analysis of the correlation between spatial and non-spatial justice.

Literature Review and Theoretical Foundations

Spatial justice is a comprehensive concept built on the principle of achieving justice in space, with an emphasis on the fair distribution of resources tailored to individuals' needs (Papadopoulos, 2019). In the social sciences, a variety of definitions and approaches have been proposed for spatial justice, and its measurement indicators are numerous. A significant portion of the research has focused on the distribution of public services and the factors that influence it. Within this context, the concept of access holds a key position in defining justice. Some researchers see spatial justice as merely equal access to public services based on distance, while others emphasize the balanced distribution of services in proportion to the needs and mobility capabilities of citizens (Chang & Liao, 2011). Dickey analyzes the conceptualization of spatial justice within a dialectical framework. In this formulation, he refers to two concepts: the spatial state of injustice and the injustice of the spatial state. According to Dickey, the first concept means that justice has a spatial dimension, and therefore, a spatial perspective can be used to diagnose injustice in space by analyzing distributional patterns (Marcuse et al., 2009). From this perspective, justice is synonymous with the fair distribution of facilities and resources among different urban areas and equal access to them (Dargahi & Shamloo, 2023). The spatial approach essentially means the equal distribution of facilities among residents without regard to their location and socioeconomic conditions. This approach aims to increase equity in terms of residents' access to facilities (Smith, 1994; Talen & Anselin, 1998; Tsou et al., 2005). It measures the effects of service location patterns and their distribution on the resulting inequality. This approach is based on questions about spatial or social-spatial distribution and the effort to achieve a geographically equal distribution (Soja, 2010). In this approach, the fair distribution of resources can be provided in four forms: equality-based, needs-based, demand-based, and market system (Safari et al., 2022). Each of these forms also emphasizes fair outcomes from multiple indicators, including population distribution, service distribution, per capita service, and access to services, as core elements.

In contrast, non-spatial justice refers to the capacity of existing structures to produce and reproduce injustice through space. Compared to the first concept, the injustice of the spatial state is more dynamic and process-oriented. According to Dickey, this concept is a critique of systematic exclusion, domination, and oppression (Marcuse et al., 2009). This non-spatial approach argues that spatial justice is not just about the fair allocation of resources. Rather, spatial justice is a revision of production relations; in other words, spatial justice is discussed as the processes that shape space, determining how much people can use resources in relation to their needs or abilities.

Thinkers like Popper, Rawls, Habermas, and Lefebvre have generally developed formulations of justice theory based on focal variables such as freedom, equality, civil rights, and participation. The core of these theories is that the stronger the role of deprived or user groups in political decisions, the better the redistribution of outcomes will be. This type of planning emphasizes the process more than the content.

In the non-spatial approach, a concept of justice is successful if it can be used for consultation among people who have agreed to live together. Based on this concept, the principles of a justice-centered city are equality, democracy, and diversity. In this regard, Lucy (1981) has replaced equal access with five concepts: equity, need, demand, preference, and willingness to pay. Using this approach to measure justice is especially helpful in countries

where many public services have been privatized. According to the theoretical foundations of the research, the conceptual research model has been presented (Fig. 1).

Method

The present research is an applied study in terms of its objective and utilizes quantitative methods. From a methodological perspective, this study is based on quantitative methods, examining the required data using statistical and spatial analyses.

Data Collection: Data for this research were collected using two methods: documentary and field-based. In the documentary section, library resources, comprehensive and detailed urban plans, and previous relevant studies were utilized. In the field-based section, data were collected through questionnaires. The statistical population comprises all residential blocks in Urmia city.

- **Spatial approach**

To measure spatial access to urban services, GIS software and the Network Analyst tool were used. For this purpose, the access network of Urmia city was first extracted. In the next step, a 900-meter distance was selected as the optimal distance, based on empirical studies (Lotfi & Koohsari, 2009; Dadashpoor et al., 2014; Ashik et al., 2020; Dadashpoor & Rostami, 2017; Dadashpoor et al., 2016; Sharma & Patil, 2024; Taleai et al., 2014) (Table 1).

- **Evaluation of spatial access**

Urban planning often uses the concept of access to evaluate the equity of urban facilities and understand the effects of land-use plans. Essentially, access can be described as a measure of the distance between an origin and a destination (Ashik et al., 2020, 21). However, this basic definition can become much more complex depending on the characteristics of the origin, the access network, and the destination.

In this research, the factors considered in evaluating access to urban services include:

1) Size of urban services (green spaces, educational, religious, medical, and sports facilities)
2) Population density
3) Distance from services
4) Overlap of urban service areas (Dadashpoor et al., 2014; Ashik et al., 2020).

To account for these factors, we calculate access to urban services using a modified version of the method proposed by Ashik et al. (2020).

In the first step, the supply-to-demand ratio (SD) is calculated for each urban service. For service i, the service area is defined based on a threshold distance (d_0 = 900 meters) in the access network. Within the service area, the population of each demand point is adjusted by its distance (in the access network) from the urban service. The supply-to-demand ratio of each urban service is determined by dividing the area of the urban service by the number of adjusted populations of demand points located within its service range (Eq. 1).

In Eq. 1, SD_{pi} is the supply-to-demand ratio for service i, A_{pi} is the area of service i, and DP_j is the population of demand point j (Eq. 2).

After determining the SD ratio for all services, the access to services for each demand point is a portion of the SD ratio of services that are within the threshold distance of that demand point (Eq. 3). Finally, the access values for demand points are standardized on a scale of 0 to 10.

In Eq. 3 , PA_j is the access to services for demand point j (Ashik et al., 2020).

- **Non-spatial approach**

To develop indicators of spatial justice compatible with the non-spatial approach to space, based on existing studies in this field, six indicators were selected: democracy, equality, civil rights, freedom,

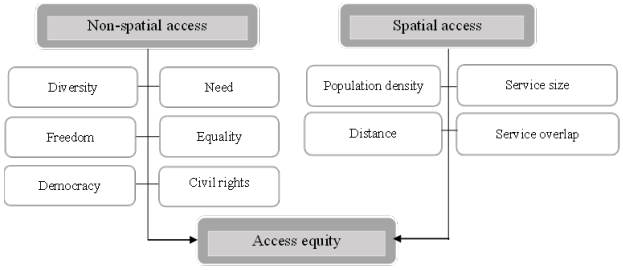

Fig. 1. Conceptual model of research. Source: Authors.

Table 1. Research on Spatial Access. Source: Authors.

Approach	Criterion	Indicator	Source
Spatial justice	Spatial distribution of services and population	Population density - Area of land uses - Per capita land use - Distance from services	Dadashpoor et al., 2015; Roustayi et al., 2013; Pourahmad et al., 2023; Ramezani Mehriyan & Manouchehri Miyandoab, 2022
	Service efficiency	Service overlap - Service area	Dadashpoor et al., 2014; Karimian Bostani & Molaei Hashtjin, 2012; Ramezani Mehriyan & Manouchehri Miyandoab, 2022

Eq. 1. $$SD_{p_i} = \frac{A_{p_i}}{\sum_{j \in \{d_{ij} \le d_o\}} DP_j * G(d_{ij}, d_o)}$$

Eq. 2. $$G(d_{ij}, d_o) = e^{-\frac{1}{2}(\frac{d_{ij}}{d_o})}$$

Eq. 3. $$PA_j = \sum_{i \in \{d_{ij} \le d_o\}} SD_{p_i}$$

diversity, and need (Table 2). In the next step, the non-spatial justice indicators were designed as a questionnaire. The response was on a Likert-type scale ranging from "very high" to "very low." A value of 5 corresponded to "very high," 4 to "high," 3 to "medium," 2 to "low," and 1 to "very low."

The Cochran formula calculations show that the minimum required sample size is 384 questionnaires. However, for the following reasons, the sample size was increased to 550: to increase the statistical power of the research and to provide better coverage of all neighborhoods. The logic for distributing 10 questionnaires in each neighborhood was based on the following principles: adherence to the principle of minimum sampling in each stratum (neighborhood), enabling inter-neighborhood comparisons, balancing representation of different areas, and, to some extent, balanced population distribution across neighborhoods. The sampling method in each neighborhood involved distributing 10 questionnaires using systematic random sampling. The reliability of the questionnaire, based on Cronbach's Alpha test, was 0.85, indicating good reliability.

Study Area

Urmia city, with an area of approximately 68 square kilometers, is the center of West Azerbaijan Province. It is located between 44 degrees 58 minutes and 45 degrees 7 minutes East longitude and 37 degrees 28 minutes and 37 degrees 35 minutes North latitude (Fig. 2). Urmia is the second most populous city in Northwest Iran and the tenth most populous city in Iran (Iran, 2016). Due to its strategic border location and key role in regional economic exchanges, this city has always been a hub for attracting migrants from rural areas and neighboring cities. In recent decades, the city has experienced rapid growth. Alongside rapid population growth, the urban area has expanded quickly and has faced challenges in the equitable distribution of facilities. Studies indicate that over 60% of the city's physical development in the last two decades has occurred through sprawling and unplanned expansion, which has exacerbated spatial inequalities (Manouchehri Miyandoab et al., 2023). The city's population increased from 67,605 people in the years between 1957 and 2016 to 736,224 people (Iran, 2016). As a result of this population growth, the geographical extent of the city experienced a nearly nineteen-fold increase during the same time frame.

Findings

The results obtained from the analysis of access to urban services using the proposed method (Fig. 3) indicate a significant spatial inequality in the distribution of services among the neighborhoods of Urmia city. This analysis, based on the access index and the supply-to-demand

Table 2. Indicators for examining and explaining non-spatial justice by criterion and item. Source: Authors.

Approach	Criterion	Definition	Item	Source
Non-spatial access	Equality	To achieve justice in society, equal opportunities for all members of society in accessing urban resources and services must be ensured.	Extent of equal access to educational services Extent of equal access to health services Extent of equal access to parks and green spaces Extent of equal access to sports services Extent of equal access to religious services	Dadashpoor et al., 2015; Tabibian et al., 2010; Saeidi Rezvani & Nourian, 2014; Safari et al., 2022; Soja, 2010; Lucy, 1981; Marcuse, 2009
	Freedom	This criterion emphasizes the active participation of citizens in decision-making and the equal right of choice for citizens in daily activities in cities.	Extent of freedom in using educational services Extent of freedom in using health services Extent of freedom in using parks and green spaces Extent of freedom in using sports services Extent of freedom in using religious services	Dadashpoor et al., 2015; Rahnama & Zabihi, 2011; Safari et al., 2022; Soja, 2010
	Civil rights	This criterion emphasizes the right to use resources and services for all citizens regardless of socio-economic, ethnic, and racial backgrounds.	Extent of adherence to rights in using educational services Extent of adherence to rights in using health services Extent of adherence to rights in using parks and green spaces Extent of adherence to rights in using sports services Extent of adherence to rights in using religious services	Dadashpoor et al., 2015; Soja, 2010
	Diversity	This criterion emphasizes the diversity of urban resources and services at the neighborhood level so that citizens have the right to choose the services in use.	Extent of diversity in providing educational services Extent of diversity in providing health services Extent of diversity in providing parks and green spaces Extent of diversity in providing sports services Extent of diversity in providing religious services	Dadashpoor et al., 2015; Tabibian et al., 2010; Saeidi Rezvani & Nourian, 2014; Safari et al., 2022; Soja, 2010; Lucy, 1981
	Need	The distribution of urban resources and services should be proportionate to the needs of neighborhoods and areas in cities.	Current status of educational services considering needs Current status of health services considering needs Current status of parks and green spaces considering needs Current status of sports services considering needs Current status of religious services considering needs	Dadashpoor et al., 2015; Tabibian et al., 2010; Safari et al., 2022; Soja, 2010; Lucy, 1981
	Democracy	This criterion emphasizes the role and participation of people in providing resources and services, and that public opinion should be considered in the formation of urban services.	Attention to public opinion in providing educational services Attention to public opinion in providing health services Attention to public opinion in providing parks and green spaces Attention to public opinion in providing sports services Attention to public opinion in providing religious services	Dadashpoor et al., 2015; Saeidi Rezvani & Nourian, 2014; Safari et al., 2022

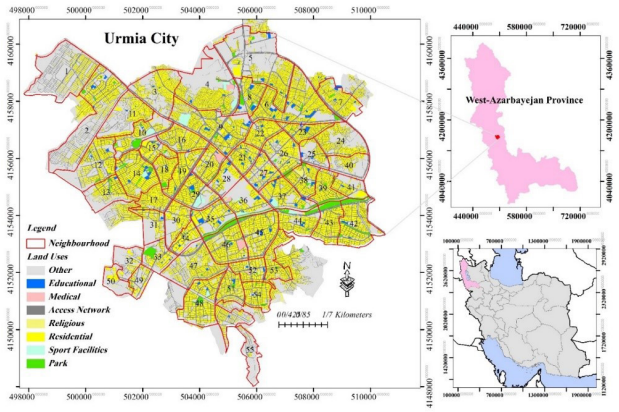

Fig. 2. Geographical location of urmia city. Source: Authors.

ratio (SD) calculated for services, confirms a dominant center-periphery pattern. Specifically, the average spatial access score (PA) in central neighborhoods is approximately 96 out of 100, while in peripheral neighborhoods, this score is 2 out of 100. This gap is associated with the relative deprivation of peripheral areas. However, the pattern is not uniform across all services. The largest gap is evident in sports and healthcare services. Approximately 68% of residential areas are outside the access range for sports facilities,

with a Gini coefficient of 0.72. Healthcare services cover only 60% of the population and 50% of residential areas. In contrast, access to religious and educational services shows a more balanced distribution, covering 80% and 75% of residential areas, respectively.

The results of evaluating non-spatial indicators of access to urban services at the neighborhood level in Urmia (Fig. 3) reveal a significant difference between central neighborhoods (average 3.7, standard deviation 0.8) and peripheral neighborhoods (especially northern and marginalized areas, average 2.4, standard deviation 0.6). Across all criteria (equality, freedom, civil rights, diversity, need, and democracy), northern neighborhoods scored an average of less than 2. 8 (with 68% of respondents at “low” or “very low”), while central neighborhoods often scored above 3. 5 (with 72% at “high” or “very high”). This pattern confirms the reproduction of the center-periphery model in the non-spatial dimension. The Gini coefficient of 0.[32] aligns with the spatial pattern (Gini 0.38), but with a key difference: the intensity of non-spatial inequality is less scattered and more homogeneous. In other words, peripheral neighborhoods are almost equally deprived in terms of non-spatial access (intra-group difference < 0. 3 in scores), whereas in spatial access, differences between neighborhoods are more pronounced and location-specific. This homogeneity in non-spatial inequality can be attributed to shared social and institutional structures that operate beyond geography. For example, weak civil rights, lack of awareness of civic rights, or cultural discrimination exist uniformly across all marginalized neighborhoods and do not create significant differences between them.

The results of spatial and non-spatial access, presented as percentages and rankings in Table 3, clearly demonstrate a significant difference in access levels between neighborhoods. For spatial access, neighborhood number 38 has the highest level of access to services at 96%, while neighborhood number 50 has the lowest at 2%. On the other hand, for non-spatial access, neighborhood number 45 experiences the highest level of access at 84%, and neighborhood number 1 has the lowest at 36%. This significant discrepancy in values reveals a profound inequality in service distribution based on two different evaluation models.

To assess the spatial patterns of both spatial and non-spatial access to services, the Getis-Ord statistic was employed (Fig. 4). The findings reveal that the spatial pattern for both indicators is significantly clustered. Nonetheless, a notable difference in the spatial distribution of hot spots and cold spots is observed across neighborhoods

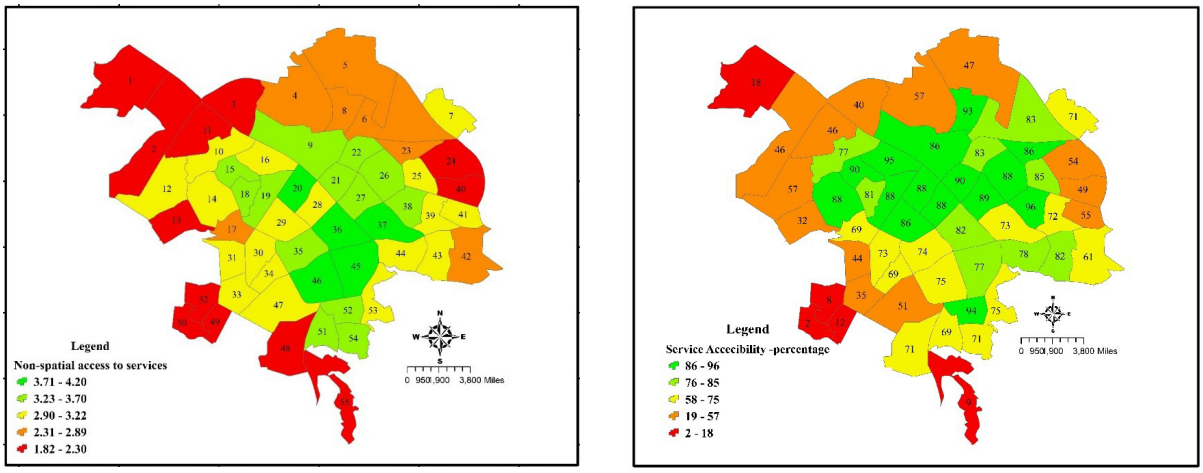

Fig. 3. The State of spatial and non-spatial accessibility to urban services. Source: Authors.

Table 3. Neighborhood ranking based on spatial and non-spatial access to services. Source: Authors.

Neighborhood number	Spatial access to services (%)	Spatial access to services (%)	Spatial access ranking	Non-spatial access to services (%)
1	18	36	51	55
2	46	39	45	54
3	40	42	48	51
4	57	51	38	43
5	47	53	44	42
6	83	55	17	41
7	71	60	31	35
8	93	56	4	38
9	86	73	13	7
10	77	64	23	21
11	46	44	46	46
12	57	63	39	24
13	32	42	50	52
14	88	62	8	25
15	90	66	5	15
16	95	64	2	22
17	69	56	34	39
18	81	66	21	16
19	88	72	9	8
20	88	82	10	4
21	90	67	6	14
22	83	66	18	17
23	86	56	14	40
24	54	46	41	44
25	85	64	16	23
26	88	71	11	9
27	89	68	7	13
28	88	64	12	20
29	86	64	15	19
30	73	60	28	36
31	44	61	47	31
32	8	43	54	49
33	35	60	49	32
34	69	62	35	26
35	74	68	27	11
36	82	81	19	5
37	73	82	29	2
38	96	74	1	6
39	72	60	30	33
40	49	41	43	53
41	55	62	40	30
42	61	58	37	37
43	82	60	20	34
44	78	62	22	27
45	77	84	24	1

Rest of Table 3.

Neighborhood number	Spatial access to services (%)	Spatial access to services (%)	Spatial access ranking	Non-spatial access to services (%)
46	75	82	25	3
47	51	62	42	28
48	71	46	32	45
49	12	42	52	50
50	2	43	55	48
51	69	70	36	10
52	94	68	3	12
53	75	62	26	29
54	71	66	33	18
55	9	44	53	47

when comparing spatial and non-spatial access. Specifically, hot spots for spatial access are concentrated in the city's central and older districts. In contrast, hot spots for non-spatial access are found in several neighborhoods in the southern part of the city, which possess a higher socioeconomic standing. While the distribution of cold spots shows similarities between the two metrics, their intensity varies.

The correlation between spatial and non-spatial access was assessed using the bivariate local Moran's I statistic (Fig. 5). The findings suggest that the spatial relationship between these two variables was largely insignificant at the neighborhood level. Specifically, 35 out of 55 neighborhoods—representing 64% of the neighborhoods in the city of Urmia—exhibited no significant correlation between spatial and non-spatial access. Conversely, a significant high-high relationship was found in 14 neighborhoods, and a low-low relationship was observed in 6 neighborhoods, all at a significance level of 0.05. Overall, a significant spatial relationship existed between the two access approaches in 36% of the neighborhoods at the 0. 05 significance level.

To assess the correlation between spatial and non-spatial access, the bivariate Moran's I statistic was used (Fig. 6). The value of 0. 51 indicates a moderate positive correlation, which

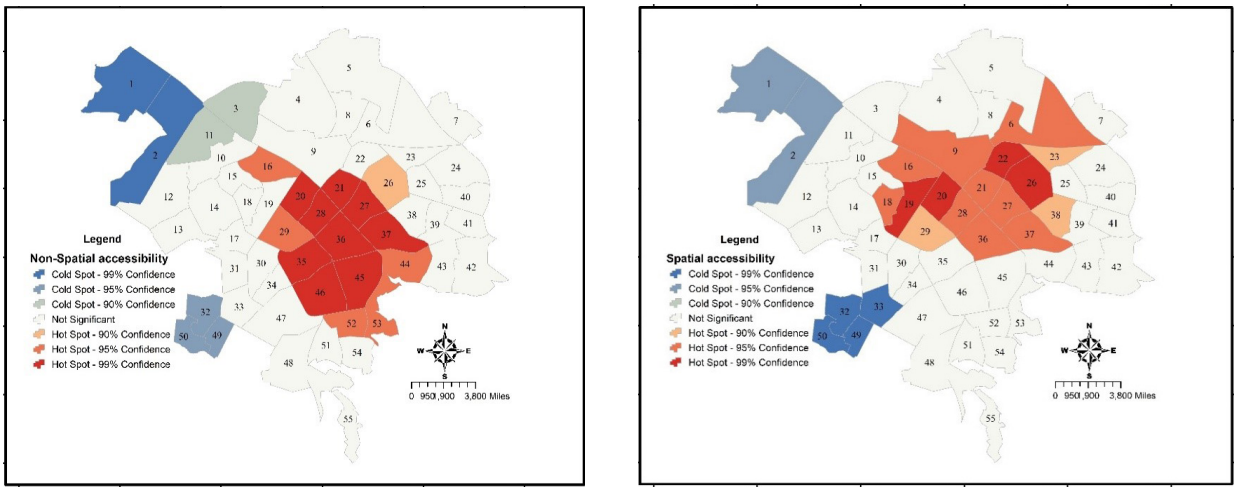

Fig. 4. Getis-ord statistic values for spatial and non-spatial access. Source: Authors.

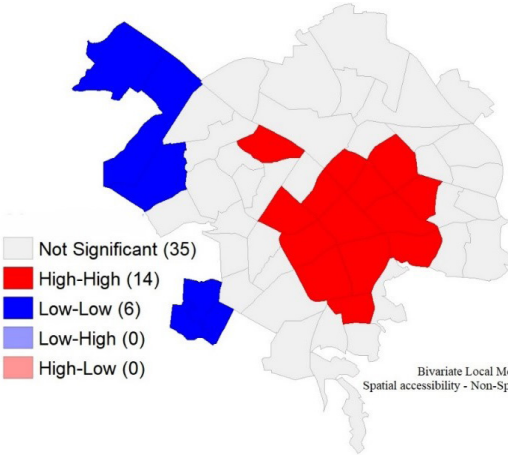

Fig. 5. Bivariate moran's test between spatial and non-spatial access. Source: Authors.

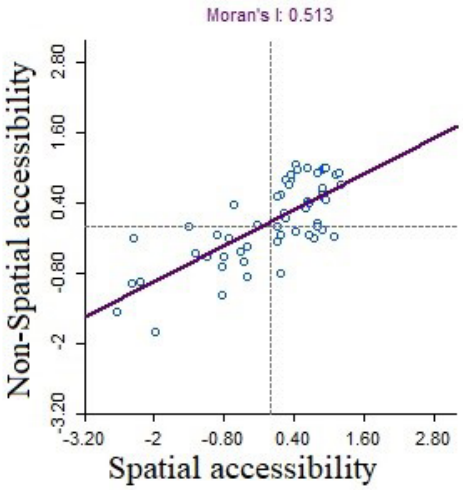

Fig. 6. Bivariate local moran's i between spatial and non-spatial justice. Source: Authors.

is statistically significant at the 0. 05 level. This result suggests that spatial access to services explains approximately 26% of the variation in non-spatial access, meaning that 74% of the factors influencing non-spatial access are dependent on variables other than the physical location of services.

Discussion

The findings of this study highlight a pattern of inequality in access to urban services in Urmia, which is evident not only in the spatial dimension (with services concentrated in central areas and marginal neighborhoods deprived) but also in the non-spatial dimension (such as barriers related to freedom, need, and diversity). At the spatial level, the low Potential Accessibility (PA) for sports (average of 4.2) and healthcare services (5.1) in marginalized areas, beyond a simple spatial inequality, can lead to a cycle of social deprivation. This is where high population density coincides with a lack of service coverage (less than 30%). This finding suggests that the distribution of services is not only inequitable

but also inconsistent with the population's needs. From a non-spatial perspective, the low scores on indicators like "civil rights" (average of 2. 8 on the Likert scale) and "democracy" (2.5) in peripheral neighborhoods point to barriers beyond physical distance. For example, a lack of awareness regarding access rights can reduce actual access. The spatial correlation of 0. 51 between the two dimensions, with an r^2 of 0.26, confirms that spatial access is a necessary condition but only explains 26% of the non-spatial variance. This suggests that while equal spatial access to urban services is necessary, it is not sufficient; non-spatial access to services must also be considered.

The findings of this study in Urmia, which demonstrate a pattern of inequality in urban service access in both spatial and non-spatial dimensions, particularly with services concentrated in central areas and marginalized neighborhoods, are consistent with international studies. For instance, Smith (1994), Talen & Anselin (1998), and Tsou et al. (2005) have also emphasized spatial inequality resulting from the concentration of services in urban centers. Furthermore, Landry & Chakraborty (2009) have identified the inconsistency between population needs and service distribution as a factor in the reproduction of social deprivation. Domestically, these findings are similar to the results of Dadashpoor et al. (2015) in Tehran, Taleai et al. (2014) in Mashhad, and Lotfi & Koohsari (2009) in Tehran, all of whom have reported a center-periphery pattern in urban service distribution. In the non-spatial dimension, the weakness in "civil rights" and "democracy" indicators in Urmia's peripheral neighborhoods aligns with the studies of Fayyazmanesh & Ranjbarki (2017) and Abdollahzadeh et al. (2021), who have identified the privatization of public services in Iran as a factor in reproducing social and economic inequalities. Therefore, it can be concluded that the findings of this research not only reflect global trends in spatial justice but also are rooted in Iran's specific socioeconomic structures.

From a theoretical standpoint, these results provide an opportunity to expand the theory of spatial justice within Iranian urban planning. Within the framework of Soja (2010), who describe injustice as a "spatial condition" (repressive processes), the findings indicate that in Iran, spatial justice encompasses not only distribution (a spatial approach) but also the reproduction of power relations (non-spatial). This enriches the theory of the just city (Lucy, 1981) in an Iranian context, where the principles of equality and diversity must be integrated with local variables. In essence, spatial justice in Iran goes beyond the level of "equality in service distribution" and reaches a level where the right to the city is a dynamic and collective demand.

From a policy perspective, the findings call for an urgent review of service distribution. Policymakers and urban planners must reconsider the distribution of public services, focusing on and strengthening underserved areas to reduce the concentration of services in central neighborhoods. In the short term, a greater allocation of municipal budgets to marginalized neighborhoods for creating local service centers (with a focus on sports and healthcare, which have Gini coefficients of 0.42-0.45) is essential. For the medium term, multi-dimensional approaches are recommended. These include public transportation programs to reduce travel time for residents of peripheral neighborhoods, educational campaigns on civil rights (to increase the democracy score by 20%), and participatory initiatives (such as neighborhood councils for prioritizing needs, based on the "need" criterion in Table 3), which can increase the correlation between the two dimensions.

Conclusion

This research, by integrating spatial and non-spatial dimensions in the evaluation of justice in urban service access in Urmia, revealed a pattern of structural inequality. The concentration of over 80% of services in central areas has led to a

reduction in access from 90% to 2% in peripheral areas. In the non-spatial dimension, the scores for indicators such as equality and civil rights have decreased from 4. 5 to 2. The bivariate Moran's test, with a correlation of 0. 51 (explaining 26% of the variance), showed that 64% of neighborhoods lacked a significant synchronicity between the two dimensions. This gap highlights how actual benefit is affected beyond physical distribution and underscores local-specific challenges.

By proposing a simultaneous spatial-non-spatial analysis, this study enriches traditional frameworks of spatial justice in Iranian urban planning, which have predominantly focused on spatial indicators. A key contribution is the application of dialectics to urban planning, using "injustice as a spatial condition" as an analytical lens to examine process-oriented inequalities such as class discrimination.This approach enables the development of integrated theories, inspired by Lucy (ibid.), for Iran's transitional cities. It transforms justice from a static distribution to a socio-spatial dynamism, laying the foundation for national justice-oriented models in comprehensive plans, which can help mitigate cycles of deprivation in cities facing similar challenges.

Despite the effort to provide a comprehensive analysis, the research faced certain limitations. First, the non-spatial data were limited to a survey of 550 households and did not cover dynamic behavioral factors (such as seasonal changes in service usage), which were omitted due to time constraints in the analysis. Second, the focus on key services (educational, healthcare, etc.) without delving into gender or age-specific sub-indicators reduced social depth. This was not feasible during GIS data collection due to a tight schedule. Finally, the bivariate Moran's test assumed simple neighborhood-based spatial weights and did not fully model the complexities of the transportation network (e.g., street traffic), a limitation stemming from technical understanding in ArcGIS software.

To address these limitations, future research should consider the following:

Use panel data from annual surveys (with at least 1,000 samples) to track behavioral, economic, and social changes of residents over long-term periods, revealing the dynamics of access to justice.

Disaggregate data based on age and gender groups, and use GIS data to simulate group usage patterns for services, thus overcoming the limitation of focusing on general services.

Compare the results from Urmia with similar cities (such as Tabriz or Mashhad) to clarify national patterns of spatial and non-spatial inequality and to enhance the generalizability of the findings for national policy-making.

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