



Social sustainability and urban third places: the case of the city of Isfahan in Iran

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Abstract Third places are a successful example of public places, which, due to their special characteristics, play an important role in enhancing the social sustainability of cities. Sustainable social development is a significant issue for the metropolis of Isfahan as this city today is facing serious challenges such as inequality and conflict in maintaining and increasing the life quality of its citizens. This research aims to explore the role of third places in promoting social sustainability in the urban districts of the city of Isfahan and to discover their significant dimensions and components. The current applied research employed a library based descriptive-analytic approach together

with a field study method. Urban experts and managers comprised the statistical population of whom 25 individuals were selected to form the sample. DEMATEL method was used to discover the trend of classification patterns of sustainability components and the role of third places. The results of the cause and effect analysis through DEMATEL show that dynamism and vitality, and flexibility are the main and the most influential factors in increasing the social sustainability in Isfahan. The results also highlight the impact of combined components and indicators of the third place with different dimensions of social sustainability, especially in the urban districts in Isfahan.

Keywords Third place · Social sustainability · DEMATEL · Isfahan

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Introduction

Urban areas have the most dynamic systems in the world (Hersperger et al., 2019). Because cities are more than a concentration of people and activities (Keith et al., 2020), they are considered one of the most specific realizations of the evolution of human societies (Amy & McDonn, 2006). The increase of megacities and their excessive growth (Sun et al., 2021), and the imposed population growth create serious challenges for sustainable urban development (Li & yeh, 2000; Verburg & Overmars, 2009), leaving significant effects on the socio-economic and

environmental development of cities (Malah & Bahi, 2022). Residential areas have always created great problems for local governments and responsible institutions (Chand, 2018), exercising a lot of pressure on infrastructure, available service systems, citizens and the urban environment (Caragliu et al., 2011). This has caused many problems such as population density, heavy traffic, inadequacy of housing and urban resources, biodiversity loss, and many kinds of pollution in today's city life (Li et al., 2009).

Urban planning can play an essential role in urban development through improving interaction between people and places, and promoting movement and urban form (Caird & Hallett, 2019; Rad Ford, 2010). Urbanization as a complex socio-environmental phenomenon (Chen et al., 2022) is an important element in developing sustainability (Valenzuela-Levi et al., 2022). Therefore, it is necessary to highlight third places as the most important component of sustainable urban development for the fulfillment of many social roles (Gałkowski & Antosz, 2022), social interaction, social feeling, and belonging outside the home and workplace (Finlay et al., 2019; Wai et al., 2018).

One of the important concepts within the framework of sustainable development is 'social sustainability' which was introduced in the 1960s in the development programs in different countries (Niemi et al., 2021), and has turned into one of the important issues in urban planning (Jeličić et al., 2021). In general, social sustainability is the process of creating sustainable places in order to improve public welfare (Pan & Du, 2021). Public spaces have broad meanings (Nahiduzzaman et al., 2020a, 2020b) and are built in relation to the environment. Like third places, social sustainability can be studied in terms of the nature and extent of access to services and facilities in a neighborhood, city, or region (Dempsey, 2012). Oldenburg's (1989) concept of third places has been of great interest among researchers in the last few decades (Williams & Hipp, 2019). Third places have high social functions (Lane et al., 2020) and include various public spaces where communities can gather happily together voluntarily away from the workplace and home (Oldenburg, 1999). As social places, they are places for people to socialize through conversation (Vaux & Langlais, 2021). Third places are a type of urban space with high-level interactions and social activities (Chen et al., 2022), so they are places with high capacities which create new links between places

and users and increase positive experiences in social sustainability (Carraz & Merry, 2022). Therefore, it is important to consider the need to create third urban places in accordance with cultural and social contexts in the process of urban planning (Kamalizadeh & Yeganeh, 2018). Hooper et al. (2015) investigated childhood neighborhoods and their impact on people's adulthood through a narrative analysis of women's life stories, and the effect of the social environment of the neighborhood on their social well-being. In another research paper, Lane et al. (2020) showed that elderly people, especially women, enjoy better social health. Biglin (2021) reported on in-depth interviews with 30 refugees about third places such as public green spaces and libraries. Her findings indicated the effective role of such places in establishing transnational relations far away from their refugee status and ethnic labels.

Despite the inequalities and sometimes severe conflicts in different neighborhoods and districts in the city, Isfahan has always been known as a city that welcomes immigrants. The presence of different ethnicities has caused the disruption of people's old relationships, usual social interactions, social, economic and cultural inequalities in the body of the city, and ultimately the loss of urban identity of the urban spaces. The presence and the functions of such valuable places in a historical city like Isfahan with a significantly different socio-political context and the flow of life in the neighborhoods are very important. Therefore, the present research seeks to explore the role of third places in the social sustainability of the urban areas of Isfahan and to detect the dimensions and components that affect it through combined DEMATEL method and Global Moran's I index.

Literature review

Focusing on social relations and interactions between citizens in the public spaces of cities can provide proper criteria for the evaluation of the functions of the environment and urban spaces. In most cultures, one can find certain places where social relations and informal interaction occur. The term open spaces was first used by Goffman (1963) to refer to such places. Despite many differences, other terms such as third places by Oldenburg (1989), hybrid places by Lofland (2017), and loose spaces by Franck and Stevens

(2006) have common characteristics in terms of social and spatial characteristics (Kuksa & Childs, 2014).

Scott & Soja (1996) paralleled the importance of space with society and history. He believed that the theory of the third spaces can account for some of the problems in the society such as deprivations, poverty, and social participation (Chakraborty, 2011). Examining Lefebvre's spatial triad (1974), Soja expounded on Lefebvre's artistic thoughts, and emphasized the understanding of his trialectic (Hanks et al., 2020).

In 1991, for the first time, the American sociologist, Ray Oldenburg proposed the theory of third places and explained the characteristics of such places (Wright, 2012). One of the very important features of the third city places is dialoguing which happens like a live game (Oldenburg, 1999). Basically, the preference for the term place to space implies Oldenburg's (its main theorist) location-oriented tendencies and the use of this concept in related urbanization sciences. Third places are places for the gathering of different social groups with special interests, which provide a close relationship between them (Swapan, 2013). They can be divided into three general categories in terms of their characteristics, activities and locations.

1. The traditional third place: They are places where people meet and interact with the old and new friends. This is the same definition as stated by Oldenburg for the third places (Mehta & Bosson, 2010)
2. Commercial third places: They include markets and commercial centers where, apart from the main activities in such places, the social aspect of interactions and relationships becomes important
3. Virtual third virtual places: They include virtual places such as online games, and virtual programs such as Facebook, Instagram, where interactions and communications occur virtually (Crick, 2011).

Many researchers believe that the design of the environment can encourage citizens to increase their sense of belonging to the environment (Yeganeh & Kamalizadeh, 2018). Because third places strengthen sociality and provide the context of collective norms for interaction between people (Williams & Hipp, 2019), they are known as springboards for the development of the community (Nahiduzzaman et al.,

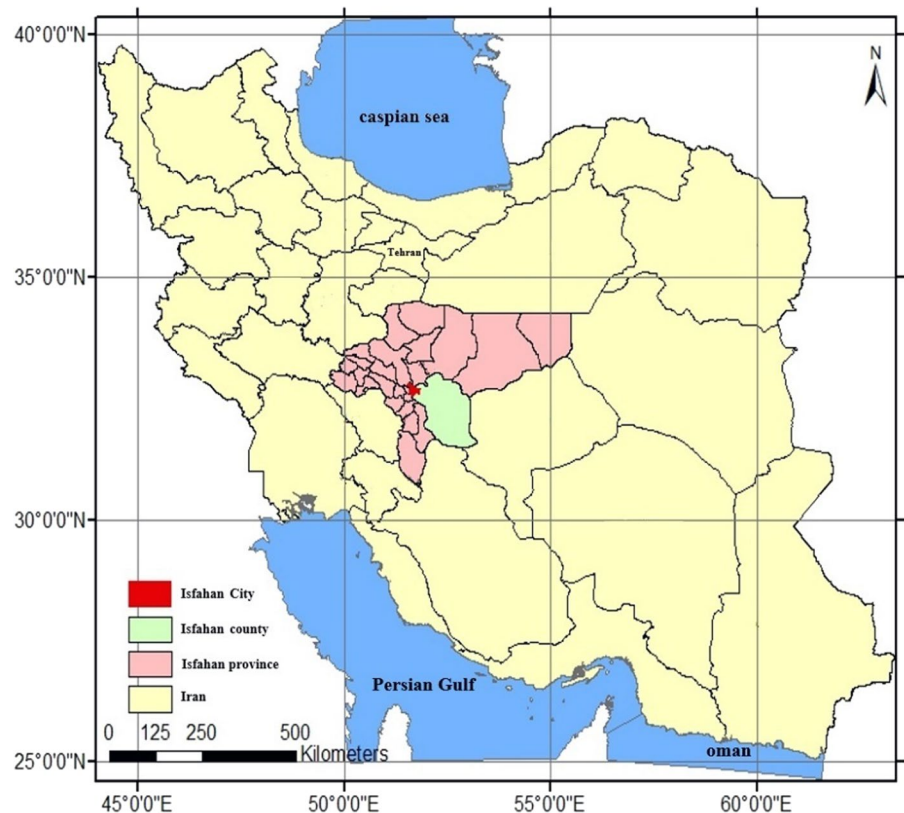
2020a, 2020b). A third place can have deep effects on the sense of community and social capital, increases the psychological health of society (Toolis, 2017), encourages potential opportunities and benefits in regard to social sustainability and economic conditions of urban areas, and thus helps urban planning and management (Kitchenham et al., 2011). It should be noted that without planning and vision in the development of cities, urban spaces will lose their unique characteristics and will have an adverse and destructive effect on the social sustainability of cities (Richlids, 2014). As there are several factors that influence the growth and sustainability of society, it is important to take care of the accurate functioning of social interactions, everyday activities in urban environments, and increasing social action (Hatami & Talaei, 2021).

Third places are known as places for the unity of citizens, suitable places for the gathering of different social groups with special interests and the close relationship between groups of different ages, sexes, ethnicities, etc. Third places in Iran can be divided into two groups: (a) the same third places as defined by Oldenburg, which is internationally known, and (b) third places that are completely related to Iranian culture such as cafes, tea bars, historical houses and restaurants, market squares, historical markets, public baths, and the like, which are all known as hangouts. The difference between these two lies in the social context, the type of current culture, and the behaviors of the citizens.

Location

The historical city of Isfahan, with an area of about 250 square kilometers, is located in the center of Isfahan province in the center of the Iranian plateau) Fig. 1(. The development of the city has been towards the southwest for many centuries (Population and Housing Census of 2006 and 2016, Isfahan province: 8–9). The city had a population of 1,961,260 in 2016. It is estimated to be around 1,870,389 in 2021, which is about 36.8% of the population of the whole province.

According to the latest urban divisions, the city has 15 districts. The river of Zayandehrud divides it into two northern and southern halves (Esfahan

Fig. 1 Isfahan city position

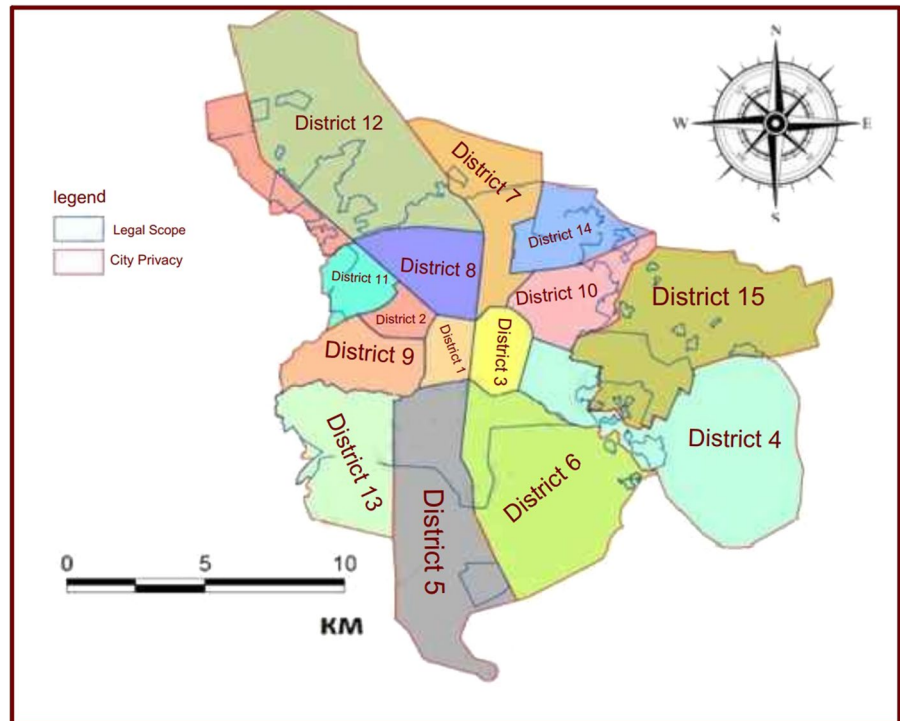
Municipality, 2022). The city districts are shown in Fig. 2 below.

Isfahan enjoys some of the best and most attractive historical places such as Naqsh Jahan Square, Chahrbagh Street, Si-O-Se Pol Bridge, Khajoo Bridge, etc. which have created prosperity for the restaurants, various accommodation places and tourism and travel complexes, the sale of handicraft products and traditional foods. Isfahan is considered one of the tourist hubs of Iran. There are also large and important industries such as petrochemical industry, steel company, refinery, etc., which have turned the city into one of the most industrialized provinces in Iran. The industrial growth of the city of Isfahan from the mid-1960s to the mid-1970s had a profound effect on the growth and transformation of the city (Arshadipour et al., 2016). The rate of economic participation in the metropolitan city of Isfahan has been on the rise from 37.3% in 2011 to 38.4% in 2016. Yet, there is a deep gap between the participation of women and men with the economic participation of 13.9% for women against the economic participation of 62.7% for men

in 2016 (National Planning and Budget Organization, Statistical Center of Iran, 2016).

Method and materials

This applied research has utilized a descriptive-analytical research method based on modeling studies. The statistical population of this research included the urban experts and managers, from whom 25 people were selected as the sample. The present applied research has utilized a descriptive-analytical research method based on modeling. To achieve the objectives of the study, the eight indicators of third places (accessibility, inviting, dynamism and vitality, comfort and security, flexibility, performance, form, meaning and content) and the six indicators of social sustainability (Social security, social interaction, social justice, social participation, sense of social belonging and social identity) were extracted under 68 sub-indicators through a purpose questionnaire (See Table 1).

Fig. 2 Study area**Table 1** The Kolmogorov–Smirnov test: indicators of the third place and social sustainability

variable	Analysis code	Score Z	Sig	Variable	Analysis code	Z score	Sig
Third places	A1	1.17	0.12	Meaning and content	P1	3.67	0.09
Accessibility	A2	1.87	0.10	Social sustainability	P2	2.48	0.08
Inviting	A3	2.48	0.10	Social security	P3	4.71	0.06
Dynamism & Vitality	A4	2.33	0.11	Social interaction	P4	3.46	0.07
Comfort & Security	A5	2.07	0.09	Social justice	P5	3.09	0.10
Flexibility	A6	1.80	0.13	Social participation	P6	2.64	0.12
Performance	A7	1.93	0.11	Sense of social belonging	P7	3.72	0.09
Form	A8	3.15	0.08	Social identity	P8	2.90	0.11

For the analysis, the DEMATEL method was used for the data collected in the current research to rank the indicators and urban districts by selecting 30 experts to compare the indicators at the neighborhoods in Isfahan. The statistical distribution method of Moran's I index was used through the ArcGis software as well as the DEMATEL method.

The DEMATEL model confirm the connection between variables or constraints of connection in a systematic developing plan. The ultimate form of DEMATEL model is to present the factors involved in the form of two groups of cause and effect and the

relation between them in the form of a comprehensible structural model (Tzeng, 2007). The Moran's I index can show where the values of geographic features are distributed high and low, and which features have very different values from their surroundings.

Results and discussion

Regarding the research method used in the present research, the DEMATEL method was employed to obtain the total influence matrix by preparing

the matrix of direct relationships and calculating the matrix of general relationships by applying the threshold limit to filter some partial (insignificant) effects (Table 2).

The cause diagram (Fig. 3) is drawn according to the ordered pair ($R_i - C_j$, $R_i + C_j$). The criteria whose $R_i - C_j$ values are less than zero are the effect, and if the values are greater than zero, they are the influence (cause) criteria.

In order to calculate the unbalanced supermatrix (W), first, the matrix T_c should be normalized. To this end, the influence of the sub-indicators of each indicator in relation to the sub-indicators of other clusters was considered as separate matrices and each element was divided by the total row of the cluster to finally calculate the unbalanced matrix (yang & Tzeng, 2011). Next, the group influence matrix was normalized (Table 3). The elements of the normalized total group influence matrix T_D were multiplied by the unbalanced supermatrix to calculate the balanced supermatrix W_w (To calculate the limited supermatrix, the weighted supermatrix W_w was multiplied by itself until the values of its vectors reached a constant value). The final results for the limited supermatrix are shown in Table 4.

(Table 5) shows that among the indicators of the third place performance ranks first with a weight of 0.120. The other indicators include dynamism and vitality with a weight of 0.117, flexibility with a

weight of 0.114, comfort and security with a weight of 0.079, form with a weight of 0.04, inviting with a weight of 0.040, accessibility with a weight of 0.035 and third place with a weight of 0.017. Among the indicators of urban sustainability, the sense of social belonging ranks first with a weight of 0.144. The other indicators include meaning and content with a weight of 0.115, social interaction with a weight of 0.109, social justice with a weight of 0.101, social identity with a weight of 0.065, social stability with a weight of 0.063, and social security with a weight of 0.023. After obtaining the weight and significance of each index through spatial operation, the ranks of districts were computed for the indicators, and Moran's I index was determined for each indicator via Arcgis software. It should be noted that at this stage, the results of DEMATEL model analysis were transferred to SPSS software to explore the effect of third places on social sustainability in Isfahan. Meanwhile, multiple regression analysis was used to discover the simultaneous effect of the eight components of the independent variable (third places) on the dependent variable (social sustainability). Social sustainability was studied as the dependent variable and the eight components of third urban places (accessibility, inviting, dynamism and vitality, comfort and security, flexibility, performance, form, meaning, and content) as independent variables in a step-by-step analysis.

Table 2 Total influence matrix

*	A1	A1	A2	A3	A4	A5	A6	A7	A8	p1	p2	p3	p4	p5	p6	p7	p8
District 1	*	0.17	0.16	0.22	0.18	0.2	0.18	0.19	0	0.19	0.23	0.22	0.19	0	0.19	0.44	0.57
District 2	0	*	0.13	0.14	0.11	0.14	0.15	0	0	0.11	0.15	0.14	0.14	0.19	0.33	0.19	0.0
District 3	0	0	*	0.13	0	0	0	0	0	0	0	0/1	0	0.12	0.21	0.77	0.19
District 4	0	0	0	*	0	0.13	0.11	0	0	0.13	0	0	0.13	0.19	0	0.19	0.91
District 5	0	0	0	0.13	*	0	0	0	0	0.13	0.12	0	0.14	0	0.16	0.17	0
District 6	0	0.17	0.17	0.2	0.19	*	0.16	0.14	0	0.16	0	0.17	0.15	0.19	0.55	0	0.77
District 7	0	0.13	0.09	0.1	0	0.08	*	0	0.09	0.2	0.21	0	0	0.14	0.94	0.09	0
District 8	0	0.11	0.11	0.14	0	0.12	0	*	0	0	0.14	0.13	0.13	0.31	0	0.19	0
District 9	0	0	0	0	0.11	0	0	0	*	0	0	0	0	0.43	0	0.27	0.55
District 10	0.14	0	0	0	0	0	0	0	0	*	0.14	0.13	0.12	0.39	0.03	0	0.07
District 11	0	0	0	0.12	0.13	0	0.14	0.11	0	0	*	0.14	0	0.19	0.17	0.19	0.21
District 12	0	0	0	0.13	0.12	0.15	0.13	0	0	0	0	*	0	0.19	0	0	0
District 13	0	0	0	0	0	0.16	0.16	0.11	0	0.13	0.16	0	*	0	0.08	0.26	0.28
District 14	0	0	0	0.18	0.17	0.11	0	0	0	0.14	0.18	0.18	0	*	0.19	0.81	0.44
District 15	0.12	0.14	0.17	0.21	0.19	0.2	0.18	0.15	0	0.19	0.22	0.2	0.16	0	*	0.14	0

Table 3 Total influence and effect of each criterion

*	A1	A2	A3	A4	A5	A6	A7	A8	p1	p2	p3	p4	p5	p6	p7	p8	
Ri	2.33	1.22	0.23	0.49	0.52	1.67	0.88	0.11	0.39	0.79	0.53	0.73	0.97	2.14	0.37	0.84	0.24
Cj	0.12	0.6	0.74	1.59	1.2	1.21	0.71	0	1.18	1.66	1.42	1.16	0	1.02	1.66	0.68	
R+C	2.25	1.82	0.97	2.08	1.72	2.87	2.09	0.82	0.39	1.97	2.19	2.13	2.14	1.39	2.50	0.92	
R-C	2.01	0.62	-0.51	-1.1	-0.69	0.47	-0.33	-0.6	0.39	-1.12	-0.69	-0.19	2.14	-0.65	-0.82	-0.44	

Based on the results given in Table 6, it can be said that in exploring social sustainability based on the indicators of the third place, six of them (meaning and content, form, comfort and security, inviting, dynamism and vitality, and performance and structure) were included in the regression. In sum, the predictor variables account for about 29/0 R2= of the variance of the criterion variable. Moreover, the results of the step-by-step regression analysis show that the most important indicator affecting social sustainability is the meaning and content, which accounts for 10% of the variance of the dependent variable. The next indicator is for, which adds 13% to the explanatory power of the model. Comfort and security are the next influential component in the regression, which has added 3% to the explanatory power of the model. The effect of all components on social sustainability is positive and significant at the 95% confidence level. In the way that for one unit increase of each independent variable, the score of the dependent variable changes by several units of the regression coefficient (beta).

Analysis of the distribution of sustainability indicators through spatial autocorrelation

In order to check the spatial autocorrelation among features (selected indicators) through Moran's I, spatial statistics analysis tools were added to in the Arcgis environment (Fig. 4, Table 7).

According to the information in figure number 4, the obtained results show that the indicators of the third place and social stability in a combined form; In areas 2, 3 and 5, powerful influence (+0.90); in areas 4 and 12, strong influence (0.70–0.90%), in areas 6, 7, 14, and 9 medium power (0.50–0.70), 10 and 8 they have a low impact (0.30–0.50%) and in areas 15, 1, 11 and 13 they have a shallow effect. Therefore, it seems that the change in political, economic, social and urban management dimensions for the future is one of the necessary changes in the social sustainability of the city of Isfahan. Also, the change in urban management methods, the use of modern technologies in the matter of urban design and architecture, increasing the budget for urban management institutions, avoiding politicization, etc., can lay the foundation for the functional development of Isfahan city in line with the social sustainability of urban areas.

Fig. 3 Cartesian coordinate system for influence and effect indicators

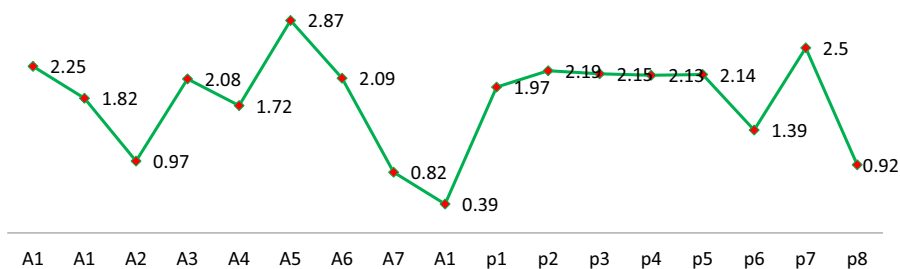


Table 4 Limited supermatrix to measure the relative weights of sub-indicators

*	A1	A1	A2	A3	A4	A5	A6	A7	A1	p1	p2	p3	p4	p5	p6	p7	p8
District 1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
District 2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
District 3	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
District 4	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
District 5	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
District 6	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
District 7	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
District 8	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
District 9	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
District 10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
District 11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
District 12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
District 13	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
District 14	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
District 15	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Table 5 Limited supermatrix and the ranks of sub-indicators and main indicators

Index	Relative weight	Rank	Index	Relative weight	Rank
Third places	0.017	8	Meaning & Content	0.115	2
Accessibility	0.035	7	Social Sustainability	0.063	7
Inviting	0.040	6	Social Security	0.23	8
Dynamism and vitality	0.117	2	Social Interaction	0.109	3
Comfort and security	0.079	4	Social Justice	0.10	4
Flexibility	0.114	3	Social Participation	0.090	5
Performance	0.120	1	Sense of Social Belonging	0.144	1
Form	0.047	5	Social Identity	0.065	6

These values are accessible in each index and are transferred as derived output values for potential use in models or texts.

The Fig. 5 shows that the global Moran’s I curve for this study is different in each index. For the indices of sustainability and the third place, this model

is clustered with the final Moran’s I weight of 0.25 and 0.32 respectively, indicating a positive spatial autocorrelation (concentrated pattern). According to Z scores (the positive numbers), there is less than 3% probability that such patterns were selected and resulted from another pattern ($p < 0.3$).

Table 6 The impact of urban third places on social sustainability

Variables	R	R2	B	Beta	t	Sig
Meaning and content	0.32	0.10	1.84	0.37	8.09	0.001
Form	0.48	0.23	0.90	0.25	4.92	0.001
Comfort and security	0.51	0.26	0.29	0.18	1.73	0.03
Inviting	0.52	0.27	0.63	0.13	2.80	0.005
Vitality	0.53	0.28	0.52	0.11	2.40	0.01
Performance	0.54	0.29	0.31	0.10	1.99	0.04

Fig. 4 Distribution pattern of sustainability and third places indicators in all districts in Isfahan

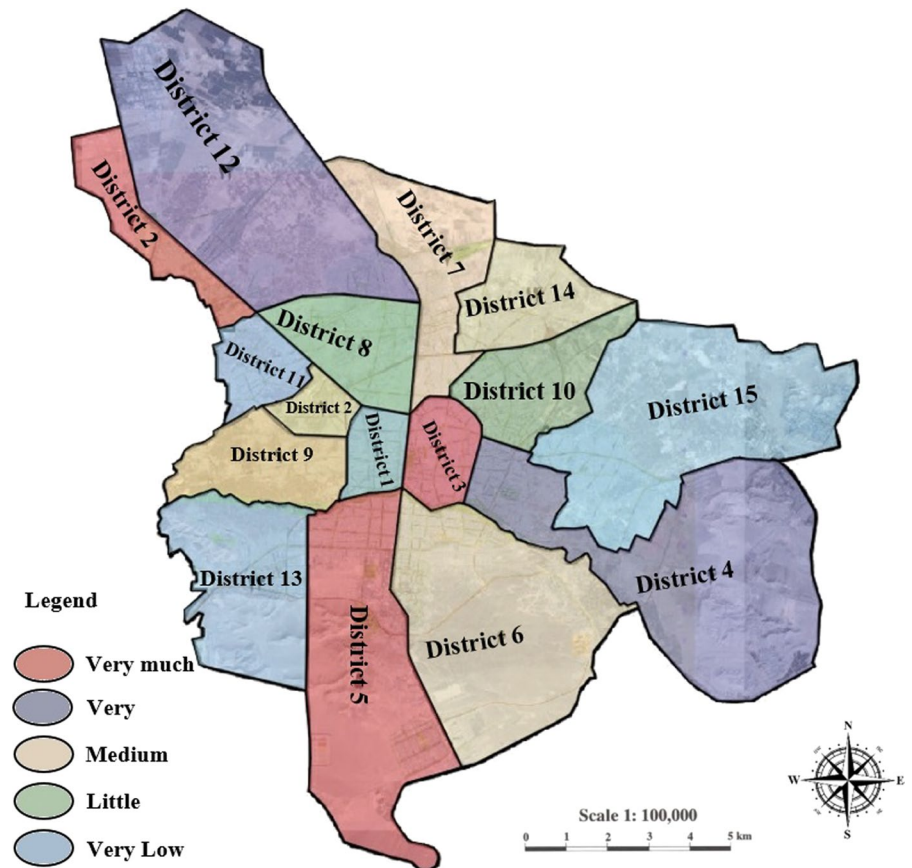


Table 7 Distribution pattern of sustainability and third places indicators

Index	Distribution pattern	Moran's I	P value	Z value
Social sustainability	Clustering	0.25627	0.000	218.387
Third place	Clustering	0.31863	0.000	236.621

Conclusion

As one of the most important public places in cities, third places promote the social relations among citizens outside of official and family life. They can

change social interactions from superficial fleeting encounters and relationships to strong social bonds. These places can witness all kinds of communications, encounters and activities regardless of ethnic, racial and gender differences. Thus, it can be said that

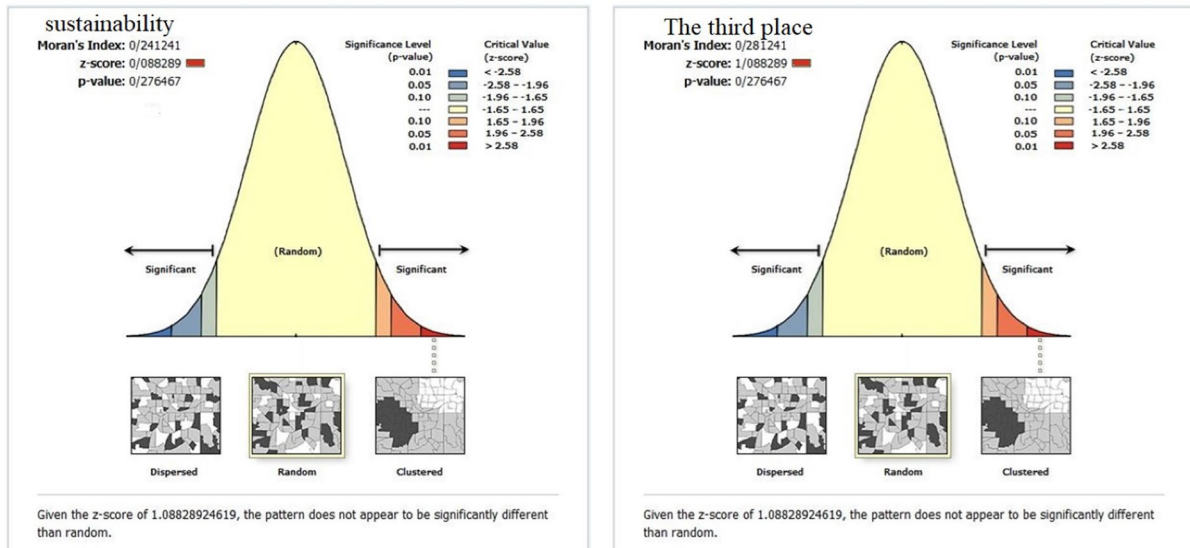


Fig. 5 Spatial autocorrelation in the categorization of selected indicators

they have a great impact on social life. Our finding also confirm the results of previous research (Biglin, 2021; Hooper et al., 2015; Lane et al., 2020) that examined the effective qualitative and quantitative indicators of third places, highlighting the significant efficiency and performance of these places. Regarding social sustainability, a summary of previous studies indicates the importance of focusing on third places and their effect on social sustainability. Although there are only few studies on third places with the focus on social sustainability, their findings indicate the significance of the impact of third places on social identity, security, social relations, social capital, etc. Despite the studies carried out on third places in different sciences, the impact of third places on social sustainability and their quantitative and qualitative roles have received less attention.

In the Iranian culture, Isfahan is renowned as 'half the world'. Handicrafts, music, various local foods, beautiful architecture, historical roofed bridges, many boulevards and palaces, and unique mosques and minarets in the city of Isfahan have long shown the talent and artistic taste of the people of this city. The presence of different ethnic groups (Armenians, Persians, Bakhtiarians, Lors, and Turks) and different religions (Islam, Christianity, Zoroastrianism, Judaism) in the city has led to the formation of social and cultural interactions beyond religion and ethnicity concerns.

This sociocultural diversity in the city of Isfahan has contributed a lot to the dynamism and vitality of the citizens. In addition, famous third places in this city (such as Naqsh-e-Jahan Square, Chaharbagh Street, Sio-Se-Pol, and Khajoo Bridge) as living platforms for the rise of social experiences, which result from the contact of local subcultures of local people and of non-native people and tourists, have played a significant role in increasing social interactions. According to the lived experience of the citizens in the third places in this city, the presence of various cultural interactions can be a positive step in improving people's social bonds and their ability to adapt to different social environments, and increasing efficiencies and formal and informal interactions.

The present research has introduced a new outlook on third places as a factor affecting the social sustainability of the urban areas in the city of Isfahan by using methods such as DEMATEL and the global Moran's I index. The distribution of the indicators of the third place and its effects on social sustainability indicate the importance of the performance and the dynamism and vitality indicators in the urban areas in Isfahan. Regarding the urban sustainability, the sense of social belonging and meaning and content indicators received the most effect. The results of regression show the importance of the components of the third place, such as meaning and content, form, comfort

and security, inviting, dynamism and vitality, and performance and structural) on the social sustainability of the districts. The results of the spatial ranking and the distribution pattern in the global Moran's I curve are different for each indicator, in such a way that in the indicators of social sustainability and the third place, the pattern is clustered, indicating a positive spatial autocorrelation (concentrated pattern). Drawn upon the research structure and quantitative findings about the social sustainability in Isfahan and the role of third places there, the following can be concluded:

- Third urban places have certain characteristics by nature which turn them into a spatial element with a tendency towards massive local, urban and extra-urban changes. The important third places in the historical city of Isfahan with important features such as accessibility, inviting, dynamism and vitality, etc. can attract population and provide interactions and social relations at the regional, national and even global level.
- Third urban places increase performance and generalize it to the other urban uses, with the only difference that the sociability of such places through social activities and interactions is compatible with the social structure of the urban context.
- The quality of sociability and increasing interactions and social relations, which are the distinct features of these places, can be considered by urban planners and designers as a goal.

Therefore, the findings of the present research underscore the high importance of urban third places such as cafes, restaurants, parks, entertainment centers, etc., which can improve the quality of urban planning in a context like the city of Isfahan.

In Iran, third places and their characteristics have received little attention while these places can provide various functions in order to increase the social sustainability of a historical city like Isfahan with a high capacity regarding such places. Therefore, it is recommended to improve the functions of indicators in order to increase social sustainability in the metropolitan city of Isfahan through carefully planned studies.

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elsewhere. The paper reflects the authors' own research and analysis in a truthful and complete manner. The paper properly credits the meaningful contributions of co-authors and co-researchers. The results are appropriately placed in the context of prior and existing research. All sources used properly disclosed (correct citation).

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Declarations

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

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