

Assessing the Livability of the New and Old Parts of Tehran, Municipality Districts 22 and 10 of Tehran

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Abstract: This study is to investigate the livability of urban region using the defined global and local parameters. Based on theoretical studies and expert reviews, livability indicators have been identified. The selected indicators were subjected to field surveys. For this purpose, we began to collect residents' opinions and analyzed the results using statistical methods. According to the results, the livability in Tehran 22 is desirable. And only some of the indicators are less favorable, that we can take steps using residents' opinions and the offered suggestions to improve them in the best form. In general it can be said, District 22 of Tehran requires great effort to become an area for living. Comparing livability indicators in the two Districts 22 and 10 as new and old regions shows that, in factors of access to infrastructure and welfare services, such as public transport services, District 10 as the old region enjoys better situation than District 22. While in factors of environmental quality indicators, the new district enjoys higher level of livability. In factors of social indicators such as the security, both the regions enjoy appropriate livability level.

Keywords: liveability, liveability indicators, District 22, District 10, municipality of Tehran

Introduction and Issue

Cities will have and have had serious effects on the environment. And if the current relationship is to continue, the impact of urban development on the environment and sustainable development should be taken very seriously [1]. National Association of Regional Councils has defined livability as follows:

Livability represents opportunities for all local communities with different values and makes them better places to work, live and family growth [2]. In Tehran, the rapid growth of urbanization put a lot of pressure on infrastructures and limited resources, leading to the collapse of environmental, social and economic sustainability. Hence, the importance of the issues of sustainable development, quality of life and livability is clearly felt. This study examines the livability indicators in economic, social and environmental dimensions in District 22 of Tehran Municipality, with an area of about 10000 hectares in the North West of Tehran. District 22 of Tehran as a new area and because of the pristine and vast lands has been introduced as the last opportunity of the city to create a proper and optimized model of urban life and district 10 is a downtown region. Opportunities and potential areas of growth, relatively short history and the high demand for infrastructure development, have given District 22 of Tehran a special status [3]. The aim of this study was to evaluate the livability of District 22 of Tehran, comparative with District 10 as an old area in Tehran, livability indicators in social, economic and environmental aspects, and suggesting ways to improve the livability of the urban area [4].

Research questions

- How are the livability of District 22 and 10 of Tehran?
- How are the economic, social and environmental indicators in District 22 and 10 of Tehran?
- Which of livability indicators in the area are in more desirable condition and which are in undesirable situation?
- How is the livability of District 10 as old region city compared to 22 district as a new region of Tehran?

Research methodology

This study is a developmental – practical research with a descriptive - analytical approach based on qualitative and quantitative methods. In data collection, in addition to documentation and library data, field surveys have been used too. In field data collected in this study, questionnaires were distributed. The collected data are then analyzed using descriptive and inferential statistical models.

Population and sample: The study sample consisted of residents of District 22 of Tehran located in the age group 15 to 64 years which are equivalent to 83,158 people. The sample size in this study was calculated using the formula Cochran equivalent to 382 people and 382 subjects were selected to complete the questionnaire. Sampling in this study was done randomly. In the 10 district was carried out data collection in 3 neighborhoods to deep interviews with current residents and businesses in the area.

Tools and Data: Combined data collection method is used in this research, i.e., a combination of library and survey methods. In this study, for information and use of comments from residents in District 22 of Tehran for livability indicators derived, the questionnaire technique is used. The questionnaire contains 27 questions each with five options according to 5-option Likert scale.

To determine the validity, the original plan of questionnaire is prepared in a multi-choice form, and observed by a number of experts, including supervisor professors and experts in urban areas and after considering the recommendations and instructions, the final drafting of the questionnaire is developed. To assess the reliability of the questionnaire, the Cronbach's alpha was used. So that 30 questionnaires were distributed and collected, and with calculation of Cronbach's alpha reliability was evaluated which was equal to 0.81.

After collecting the information, the data collected were analyzed and described using statistical techniques. The test used in this study, are one-sample t-test and Pearson's correlation coefficient test.

Theoretical Foundations: livability is referred to as an urban system where social, physical and mental health of all the residents has been considered. This quality is about urban spaces that reflect the cultural richness. Key principles that reinforce this concept include equality, dignity, accessibility, recreation, participation and empowerment [5]. General and overall concept of livability is often considered in relation to economic, social and environmental broad areas. In general, livability means achieving the ability to live and in fact it is achieving the desirable urban planning quality. Broad debates about sustainability, transportation, lively environments, different aspects of community, etc are in progress on the concept of livability [6]. This shows that access to urban livability through vitality, ecological sustainability, solving social problems (poverty, class differences, etc.), economic (unemployment, etc.), cultural (illiteracy, etc.) is achieved [7].

Landry examined the concept of livability with 4 main approaches as a case study. He enumerates 9 effective measures to identify a viable city:

Population, diversity, access, safety, security, identity and distinctiveness, creativity, communication and collaboration, organizational capacity and competition, livability as many planning paradigms such as sustainability, etc are inseparable and unextendable to economic, social - cultural, environmental dimensions as follows: [8]

Economic livability: it is including employment levels, net income and living standards of the people, the retailers' performance, the value of land and properties and finally that part of the costs of living and residents' traveling considered in connection with the urban planning rules.

Social-cultural livability: measured by the level of activities and social interactions as well as the nature of social relationships. A viable city socially can be described due to low levels of deprivation, strong social cohesion, good communications and dynamicity between the social strata, security, public spirit and civic pride, a wide range of lifestyles, harmonious relations and a refreshing urban society.

Environmental livability: On the one hand, ecological sustainability is raised in relation to variables such as air pollution, noise, waste sewage removal, etc and much traffic and on the other hand it depends on the consumption of energy resources in the city resulting from the lifestyle of the inhabitants, their consumption behavior and spatial layout of the main elements of the city and its neighborhood.

Livability principles: Achieving livability of city requires the establishment of conditions and areas proposed by Henry Lennard. On this basis, viable settlement is where provides accessibility to infrastructures (transportation, communications, water and sanitation), food, clean air, affordable housing, proper and desirable job, green spaces for all citizens [9].

Livability indicators: main indicators of the present study are derived from the standard indicators of the livability of the Economist Institute in 2014, [10]. For sub-indicators (items), with respect to expertise considerations in the area, the tested indicators have also been used by other theories [11], [12], [13]. Accordingly, the questionnaire questions were set in order to assess the livability level. In Table 1, the livability indicators specified in main dimensions, indicators and items based on theoretical analyses, expertise and localization of indicators and items.

Table (1) Assessment measures of the level of livability in District 22 of Tehran

C	Indices	Indicators
Economic	Structural	Public transport
		Structural welfare and services
		The ability riding bike and pedestrian
Social	Health	Public and private health care assess
	Security	Social and personal security
	Training	General education
Environmental	Environmental culture	Access to green space and parks
		Air pollution and wastewater situation

Source: research results

As Table 1 shows, the research indicators have been examined in 3 economic, social and environmental dimensions. 5 indicators of infrastructure, health, stability and security, education, culture and environment are considered as the main indicators and parameters of public transport, infrastructures and services facilities, the ability to walk and bike, access to health care, personal and social security, a sense of place, public education, access to green space and parks and air pollution and disposal of surface waters as the sub-indicators of these five main indicators.

Introducing the area under study

District 22 of Tehran Municipality, located in the North West of Tehran with an area of about 10 thousand hectares (over 6000 hectares are within service range), is equivalent to twice the biggest area of Tehran and make up one-seventh of Tehran area and is located in Tehran's northwestern area at the downstream of river basin of Kan and Vordrij rivers. Potential opportunities and areas of growth, high demand for infrastructure development and relatively short history have given District 22 of Tehran a special status in the capital area. These conditions have drawn a picture of the scope of northwestern Tehran in comprehensive urban map in which the region has been introduced as Tehran's last chance to establish a good and modernized pattern of urban life.

Social features of District 22 of Tehran: Based on available information, the volume of the region's population in 1979 was about 31,162 people. The region's population has been reported about 107 820 people in 2005, [14]. Population growth rate was 4.1 and 6.8 percent respectively over the past two decades, while the population growth rate of Tehran was 3.1 and 2.1 percent respectively in the same period, respectively. Increase in population up to 128,650 people in 2010, although indicates the continuation of the increasing trend of the population of the region. But the decline in its growth rate over the period 1985-2010 suggests the lowering rate of population growth over the last 5 years.

Employment and unemployment: The last general census indicators in 2005 show that, the employment rate in the District 22 is equal to 89.4% of the active population. And major changes in the economic sectors during 1995-2005 have led services as the dominant part reach to a share over 72% and at a level higher than the share of services sector achieved in Tehran.

Analysis of the findings

The characteristics of the statistical sample: As mentioned above, in order to assess the livability level of District 22 of Tehran and measuring determined indicators, the provided questionnaire was distributed among and completed by 382 determined samples. 51% of subjects were male and 49% were women. More than 62% of participants were in the age group 35 to 55 and 70% had bachelor degree and higher. View samples characteristics in Table (2).

Table (2) - Descriptive data related to statistical sample

	sex		Age			Education			
	Male	Female	15-34	35-54	55-65	Illiterate	Diploma and under	Undergrada- uates	Master degree and higher
Numbers	195	187	66	238	78	1	119	218	44
Percent	51	49	17.3	62.3	20.4	0.3	31.2	57.1	11.5
Total	382		382			382			

Sources: research results

More than 61% of the sample subjects have been staff. Job Profiles of the sample are presented in Table (3).

Table (3), job features of the sample under study

Job kind	Free	Staff	Worker	House work	Student
Numbers	73	243	18	37	20
Percents	19.1	61.3	4.7	9.7	5.2

Sources: research results

Results: As previously described, in this study, to measure the livability at the District 22 of Tehran, the determined indicators based on the Table (4), were asked in the form of 27 questions of the statistical sample. Table 4 shows a summary of findings in relation to the livability indicators in the region. According to results, among the 14 items in the table, the average of 12 items is higher than 3 (3 is the average in the five-option Likert range). (Table 4)

Table (4) Summaries of quantitative surveys of livability indicators in District 22 of Tehran

Indicators	Freq.	Very high	high	Some what	Low	Very low	Total	Mean	Std.Deviation	Variance
Air pollution situation	N0.	0	72	68	152	90	382	3.68	1.034	1.068
	Per.	0	18.8	17.8	39.8	23.6	100.0			
Satisfaction of residents of the public transport network	N0.	0	8	46	307	21	382	2.11	0.498	0.248
	Per.	0	2.1	12.0	80.4	5.5	100.0			
Satisfaction of residents of pedestrian pathways	N0.	0	35	165	151	31	382	2.53	0.772	0.596
	Per.	0	9.2	43.2	39.5	8.1	100.0			
Satisfaction of riding bike pathway	N0.	0	0	30	201	151	382	1.68	0.612	0.374
	Per.	0	0	7.9	52.6	39.5	100.0			
Satisfaction of flooring and asphalt roads and streets	N0.	60	169	127	26	0	382	3.69	0.886	0.666
	Per.	15.7	44.2	33.2	6.8	0	100.0			
The safety of women	N0.	1	32	146	187	16	382	2.52	0.720	0.518

traveling at night	Per.	0.3	8.4	38.2	49	4.2				
Satisfaction of the health pedestrian	N0.	1	179	202	0	0	382	3.47	.505	.255
	Per.	.3	46.9	52.9	0	0	100.0			
Satisfaction of the health centers	N0.	38	153	152	39	0	382	2.5	0.809	0.655
	Per.	9.9	40.1	39.8	10.2	0	100.0			
Satisfaction of educational spaces	N0.	195	120	25	42	0	382	3.23	0.984	0.968
	Per.	51	31.4	6.5	11	0	100.0			
Satisfaction of daily service centers	N0.	49	153	136	44	0	382	3.54	0.859	0.737
	Per.	12.8	40.1	35.6	11.5	0	100.0			
Access to green spaces and recreation	N0.	73	25	158	124	2	382	3.11	1.080	1.166
	Per.	19.1	6.5	41.4	32.5	0.5	100.0			
The neighbors relationship rate	N0.	113	95	165	9	0	382	3.82	0.889	0.790
	Per.									

Sources: research results

In the meanwhile, the highest average is associated with spending leisure time in the region as much as 3.82. And then, satisfaction of flooring streets, the air quality, and access to centers providing daily needs, with an average of 3.69, 3.68, 3.54 and 3.52 respectively. High average in environmental indicators shows that the area enjoys good environmental quality. Moreover security, access to hiking and biking facilities, the relationship between neighbors, and the desire to continue living in the region, shows that the region in terms of various dimensions such as livability, social, welfare, identity and quality of life aspects is in good condition. In other items and the twenty seven raised questions, the situation is about theoretical average 3 or slightly lower. The lowest average, 2.11, is related to access to public transportation. And access to bike lanes is 1.68 that can be related to fledgling situation of the region and high distance from the city center and large area of the region that reduces the accessibility of lanes special to bike throughout the region.

Comparing livability indicators in old and new regions of Tehran

In this section, livability indicators in District 22 of Tehran are compared with that of District 10 of Tehran which is one of the old and central neighborhoods of Tehran. Livability studies in District 10 based on studying livability indicators in one of the region's neighborhood. The region under study is Neighborhood 3 in District 10 of Tehran's Municipality. The population of this neighborhood is 37,200 and covers an area of 94 hectares. This neighborhood is limited to Azadi Street from north, to Azerbaijan Street from south, and to Navvab highway from east.

Table4 summarizes the statistical findings of surveying livable items in District 22 of Tehran Municipality. The livability status was evaluated according to different criteria and items at the level of Neighborhood 3 of District 10 of Tehran Municipality through five-choice Likert spectrum as presented in Table (5).

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Table (5) summarizes of survey the livability indicators statues in the 3 Neighborhood of District 10 of Tehran

Indexes	Indicators	Very bad (1)	Bad (2)	Some what (3)	Good (4)	Very good (5)
Environment quality	The absence of pollution (air, water, noise,...)	*				
	Access to green spaces and neighborhood parks	*				
	Environment health			*		
Access to services and amenities	Shopping centers					*
	Education centers			*		
	Healthcare centers					*
	Parking	*				
	Recreation, sports and cultural centers	*				
	Children's play spaces	*				
	Safety	*				
	Religious					*
Physical factors	Appropriate density construction	*				
	Appropriate density population	*				
	Structural strength		*			
	Enough open space	*				
	hierarchical road network			*		
	Proper quality pedestrian roads	*				
	Children's play space		*			
	lack of exclusive use in the neighborhood		*			
	The provision adequate housing for different classes		*			
	Appropriate Urban infrastructure					*
	Public transport					*
Social factors	Sense of space				*	
	Coherent neighborly relations.		*			
	Security					*

Source: research results

The results of livability in the Neighborhood 3 of District 10 of Tehran Municipality showed that in terms of shopping centers and religious, health centers as well as convenient access to public transport, security and the lack of exclusive use in the neighborhood. In terms of factors such as The absence of pollution noise, air, landscape, Access to green spaces and neighborhood parks, parking as well as entertainment, sports and cultural centers, children's play space, safety, desirable building and population density are in adverse conditions. But it enjoys good conditions in terms of urban facilities regardless of the lack of safety against earthquake. [15].

In terms of health and environmental health, high quality training centers and hierarchical network of roads, Proper quality pedestrian roads, the provision adequate housing for different classes, sense of place and Coherent neighborly relations are in an average level. Comparing livability indicators in the two Districts 22 and 10 as old and new regions show that, in terms of access to infrastructure and welfare services, such as public transport services, District 10 as the old region enjoys better situation than District 22. While in terms of environmental quality indicators, the new district enjoys higher level of livability. In terms of social indicators such as the security, both the regions enjoy appropriate livability level.

Analytical findings

Then, using quantitative analysis methods, the overall aspects of the economic, social and environmental livability with categories of items associated with each indicator and statistical tests of research hypotheses were tested statistically. To test research hypotheses, one-sample t-test, and Pearson correlation coefficient were used.

Table (6) statistical measures and t-test on economic indicators

Statistical measures Factors	Freq.	Mean	Sta.dev.	Error mean dev.	Stat. T	F.d.	Sign. level	Mean Differences
Structural facilities	382	3.047	0.63	0.323	1.458	381	0.047	0.047
Public transport	382	2.494	0.51	0.026	-19.03	381	0.000	-0.50
Riding bike and pedestrian ability	382	2.108	0.49	0.025	-30.12	381	0.000	-0.89
Economic	382	2.55	0.30	0.157	-28.48	381	0.000	-0.44

Source: research results

Test value =3

The table shows from among the economic indicators, infrastructure facilities and services (M = 3.04), public transport (M = 2.49) and the ability to walk and bike (M = 2.10), ranked highest average respectively. According to the t-value calculated for economic indicator or **Degree of Freedom 381**, the average of variable is 2.5 and the level of significance of the test is equal to 0.000. In this test the null hypothesis implying no difference between the sample average and the theoretical average is rejected (P <0.05 or 0.00 <0.05). And with confidence level as much as 95%, based on the observed data, we can say that sample average is significantly different with (statistical) population average. And because the sample average is smaller than theoretical average, we can say that economic indicator status in the region is below the average level (M <3 or 2.55 <3).

Table (7) statistical measures and t-test on social indicators

Statistical measures Factors	Freq.	Mean	Sta.dev.	Error mean dev.	Stat. T	F.d.	Sign. level	Mean Differences
Sense of space	382	3.173	0.88	0.045	3.84	381	0.000	0.173
Social security	382	3.137	0.42	0.021	6.29	381	0.000	-0.50
Public education	382	2.946	0.69	0.035	-1.49	381	0.135	-0.053
Access to public and private healthcare	382	2.490	0.50	0.025	-19.80	381	0.000	-0.509
Social	382	2.937	0.44	0.022	-2.78	381	0.006	-0.63

Source: research results

Test value =3

The table shows that from among the social indicators, the sense of place to a place ($M = 3.17$), personal and social security ($M = 3.13$), public education ($M = 2.94$), and access to public and private health care ($M = 2.49$) rank highest averages respectively. According to the t-value calculated for social indicator with **Degree of Freedom 381**, the average variable is equal to 2.9 and the test significance level is 0.006. In this test the null hypothesis, is based on the lack of difference between the sample average and the theoretical average is rejected ($P < 0.05$ or $0.006 < 0.05$). And with confidence at level of 95%, and based on the observed data, it can be said that the sample average is significantly different with population average. And because the sample average is smaller than theoretical average, it can be said that social indicators in the region are lower a bit from moderate level ($M < 3$ or $2.93 < 3$).

Table (8) statistical measures and t-test on environmental indicators

Statistical measures Factors	Freq.	Mean	Sta.dev.	Error mean dev.	Stat. T	F.d.	Sign. level	Mean Differences
Air pollution and wastewater	382	3.742	0.76	0.039	18.88	381	0.000	0.742
Access to green space and park	382	3.142	0.29	0.015	9.31	381	0.000	0.142
environment	382	3.442	0.43	0.022	19.65	381	0.000	0.442

Source: research results

Test value =3

The table shows, among the environmental factors, air pollution and surface water disposal ($M = 3.74$) and access to green space and parks ($M = 3.14$), rank the highest average respectively. According to the t-value calculated for environmental Indicator with Degree of Freedom 381, the variable average is 3.44 and the significance level of the test is 0.000. The null hypothesis in this test implying lack of difference between the sample average and theoretical average is rejected ($P < 0.05$ or $0.00 < 0.05$). And with confidence level of 95%, based on the observed data, we can say that sample average is significantly different from the population average, and because the sample average is smaller than theoretical average, it can be said that the environmental indicator in the area is above moderate level ($M > 3$ or $3.44 > 3$).

Conclusions

Evaluation of livability in District 22 of Tehran as one of the new areas of the city and the last zone of urban development shows that, in general, the level of livability is acceptable. Based on field surveys and residents' opinions, livability is above average in environmental dimension, close to average in the social dimension and somewhat lower than average in economic dimension. According to this study, the average public transports, capability of walking and biking and access to public and private health care are obtained less than the theoretical average (3). While the personal and social security, sense of place, access to green space and parks, air quality and the quality of surface water disposal are obtained more than theoretical average (3) and are in a desirable level. According to the results of this research, it appears that livability indicator in District 22 of Tehran is desirable. But the favorable economic and social indicators require planning and sustainable management to achieve a region with a higher level of livability. Comparing livability indicators in the two Districts 22 and 10 as new and old regions show that, in terms of access to infrastructure and welfare services, such as public transport services, District 10 as the old region enjoys better situation than District 22. While in terms of environmental quality indicators, the new district enjoys higher level of livability. In terms of social indicators such as the security, both the regions enjoy appropriate livability level.

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