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**THE STUDY OF THE ROLE OF PARKS IN IMPROVING LIFE ATTRACTION IN
URBAN REGIONS (MASHHAD CASE STUDY)**

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ABSTRACT

The attraction of urban residential environments as the main settlement of the people is increasing day by day, so that these environments in the first place provide good tools for developing different life indexes. Secondly, a high population lives in urbanite regions or will live in near future. The increase in urban green spaces and improving environmental conditions in cities by creating parks and vicinity of urban people to natural places has led to abundant researches aiming to qualify the citizen's access to healthy and unpolluted air. The primary purpose of this paper is to study the impacts of increasing and improving parks and urban green spaces on attraction of city's residential regions and increasing citizen's satisfaction level. In this paper, the relation between increasing these factors and increasing urban green spaces is studied by means of population growth statistics and the level of regional construction. The desired statistics majorly derive from Mashhad municipal published statistics, the research method is positive correlation the tests of which are performed by Pearson method in Excel. In information analysis the level of urban environment improvement correlation to increasing neighborhood green spaces was proved with a proper correlation degree.

Keywords: Regional Attraction, Local Green Space, Regional Green Space, Urban Green Space

INTRODUCTION

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On 2010 Rasoul Ghorbani and Razieh Teimouri in an article with the subject of analysis on the role of urban parks in improving the quality of urban life by means of seeking-Escaping pattern, examining mental-social impacts of urban parks on improving citizen's life quality through examining parks' attraction factors, and on covering their residence by means of above pattern. Research findings suggest that Tabriz citizens turn to urban parks to access healthy air, familial recreation, acquire exhilaration and stay away from pollutions and tightness of residential environment, hiking, refreshment, and escape from life monotony. In this research people's life quality and its relation to urban parks is studied and familial life and collective life is analyzed in terms of health factors, evaluating the impacts of urban parks on improving these variables. Research data were collected in an inquiry between 100 people from Tabriz citizens. In this study the pattern of seeking-escaping was used to estimate the attracting and repelling factors of urban parks for the citizens by benefitting from questionnaire tool, which describes the reasons for tendency or intendancy toward public green spaces. The questionnaire inquires the reason why people go to parks, their experiential feeling, and ultimately, analyzes people's viewpoints by means of

Likert scale. In this questionnaire, the major reason for going to parks is mentioned to be happiness, rest, and recreation and the important repellent factors dwelling place are polluted air of residence and lack of recreational amenities at home. Regarding mentioned findings and the fact that local parks are places for answering part of residents' mental-social needs, it seems inevitable to develop urban parks and green spaces, combined with Tabriz increasing development and aiming to improve the quality of urban life (Ghorbani and Teimouri, 2010).

On 2014, there was a similar research in London about the impact of Greenwich open space on London urban environment quality by inquiry through posing questionnaires in the city, leading to positive result on urban life³. In this article, questionnaires were designed with in depth descriptive research method. The research showed that the worthiest open spaces improving the quality of urban life are: the diversity of physical opportunities and characteristics, cultural multiplicity, and socializing. This project reveals intensive need for diversity of natural characteristics community facilities in local

³ Burgess Jacquelin. *People, Parks and the Urban Green: A Study of Popular Meanings and Values for Open Spaces in the City* 2014

regions and urban capabilities of green spaces in developing the quality of all resident's life.

METHODOLOGY

Nowadays, it is considered one of the main contributors to development to enjoy the facilities of spending spare time in green spaces. An active society tending to forcefully move toward development needs rest, quiet, and recreation as well. The best places for body and soul recreation are green spaces designed for reaching the same purposes⁴ (Soltani, 2010. P. 144). Recreation is an important factor in supplying public health and social improvement. It causes welfare and makes life more pleasant, causing people in different age groups, old and young, spend joyful hours through their favorite activities and their life gets filled with happiness. Correct distribution and placing of sites for spending spare time can be an important factor in attraction of urban residential environments (Hiraskar, 1996. P. 117). In this article the important question is the importance of parks and green spaces and examining how much they affect improving environmental conditions in urban regions. Doubtlessly, green spaces and urban parks should be considered among the most basic factors of natural and human life in today's

urbanization (Esmaeli 2002. P. 11). If they are planned correctly, they have a desirable effect on making human's body and soul healthy (Shiri, 2006. P. 32). For evaluating different urban region's level of benefiting from green space and park, the statistics published by Mashhad municipal classified in tables according to their influence scope. This classification includes three parts of neighborhood parks, regional parks, and urban parks. Also it is used for leveling the quality and environmental conditions improvement in different urban regions' two indexes of regional population growth and the level of constructions and building permits in each district. Urban regions applied by Mashhad municipal are used in urban areas classification method to be able to use the exact and perfect statistical information of regions. The methodology is of correlation type in which the index of green area and park is considered as an independent variable and the level of life improvement in regions as the dependent variable. In this model, hypothesis test is according to existence or no-existence of linear relation, because null slope or linear relation non-existence is considered as null hypothesis, which is calculated after proving the existence of a linear relation between line slope and the level of correlation. All calculations are provided by excel software.

⁴ Bahram Soltani, K. Environmental Urbanism Discussion And Methods Collection, 2008, p. 144

Regarding the fact that the numbers of statistical observances are divided according to the number of Mashhad urban regions, 13 regions, we cannot consider the applied statistical population with normal distribution, that's why the distribution function t-student is used. All above coefficients and parameters are included in the new edition of excel software used for information analysis.

Theoretical Basis

Urban green spaces are counted as community infrastructures; on the other hand, creating green spaces can no more be planned independent from urban communal needs. Nowadays, entitlement to facilities of spending spare time in green spaces is counted as one of the main contributors to development. An active society tending to forcefully move toward development needs rest, quiet, and recreation as well. The best place for body and soul recreation is green space designed for this reason⁵. Two essential aspects should be considered in creating public recreation systems.

- 1- Recreation systems should create proper conditions for spending spare time of all age groups through the year.

- 2- These facilities should be located somewhere easily accessible to all dwellers. These places are usually located 500m to 1km, has complete immunity and easy accessibility⁶ (Hiraskar, 1996. P. 117)

There are two types of recreation systems: inactive systems (parks) and active systems (playgrounds)

- 1- Parks: these recreation systems are created for answering needs like open space, fresh air, evening rests, and peace of mind for all social classes. Parks and gardens should be built as desirable as possible by planting all types of trees, bushes, and flowers as well as coordination with fountains' scheme and alike. These kinds of parks and gardens are counted as inactive kind of recreation facilities.
- 2- Playgrounds: this system presents active recreations as it causes physical growth. The above mentioned systems bear a very important role in cultural, physical, and social urban design aspects. They are practically so close and even cover each other sometimes (Hiraskar, 1996. P. 118)

Findings due to experimental researches have identified that many indexes may be applied

⁵ Bahram Soltani, K. 2008. Environmental Urbanism Discussion And Methods Collection, p. 144

⁶ Hiraskar, G. K. 1996. Fundamentals of Urban Planning. p. 118

to the process of evaluating residential environment. Also, according to these findings, the existence of a different pattern of different residential environment indexes' grouping is considered an important factor. By the way, the results are not definite regarding the limited collection of indexes or reagents that may be considered the most important environmental indexes or reagents⁷. Doubtlessly, green areas and urban parks should be counted as one of the most fundamental factors of natural and human stability in today urbanity, which will have desirable impacts on human body and soul health. Urban parks as the most important servicing public spaces have much role in improving social, cultural, economic, and environmental conditions of urban regions. These spaces are regarded parallel to urban region's growth and densification in different communities and diverse strategies are devised for proper location and distribution of them in urban environments⁸.

Numerous urban planners have expressed their desire for greenest city. They regard the earth with dwellings equipped the ceilings with solar cells, the valleys electrical generation windmills, and the rivers with hydroelectric turbines. They want the cities

with green technologies going towards carbon-free economy. These are faraway wishes but modernization plan should be combined with practical plan of building flexible and compatible cities. The need for compatibility urged with recent changes in earth climate. The climate had changed before this plan. The earth's temperature has increased for more than one degree since 1990, thousands of fatalities occurred in Europe due to 2003 heat wave, and England floods on 2007 imposed three billion pounds of damage to their economy. Urban regions evolved by human thought route change and new urban problems like area of rivers, energy networks, forests, wastewater, and similar problems showed off more than before⁹ (Antrobus, 2014).

Parks are generally known as spaces for recreation and playing, but they pay just one major role for urban environment. Urban parks which mostly contain green spaces, gathering space, sceneries, fountain, and public gardens, are specifically the introducer of property valuing project, traffic flow, public events, and the urban culture of our community. Our cities and neighborhoods possess structure, beauty, breathing place, and value. Nowadays, the fundamental role of

⁷ Rafieean M. 2011. Evaluating the Quality of Urban Residential Environments, p. 15

⁸ Ghorbai, R. An Analysis on the Role of Urban Parks in Improving the Quality of Urban Life. Case Study: Tabriz Urban Parks, 2008

⁹ Derek Antrobus. Smart green cities: from modernization to silence? Urban Research & Practice. 2014

parks in improving life quality in our cities is growing as a public viewpoint (Antrobus, 2014).

68% of voters agreed to sanction 72 million dollars for constructing green space and park, this amount focused on the green belt around the city. In neighbor's community existed quite real and negative impacts of dispersal and voter managed to notice these impacts. Neighbor units require maintenance and population increase with attraction and livability. Yet density mostly remains a controversial for neighbor units in all different sizes. A powerful policy defending parks and green spaces can play a vital role in this regard¹⁰ (Beasley, Larry. 2000).

In statistical segmentation of Mashhad urban community, this city includes 13 regions in management and executive planning; we have observed geographical and population proportions in these regions. On the other hand, statistical information according to above zoning, leads most of urban studies to this segmentation as the first priority.

We use two indexes of population and construction to examine the level of urban life attraction. For population index we use population growth rate on 5 years of 2001 to 2006, which indicates citizens' interest in

dwelling in an urban region. We also use the number of building licenses issued on 2006 for construction index, which indicates the level of dwellers' reception of renovation and increasing residential units in the region. To study the indexes of park and green spaces, we use the area of regional green spaces and parks. These statistics are divided into two groups of local, regional, and urban parks. Local parks are the parks with area of less than 2 hectares and operate with influx domain of neighborhoods and urban regions. Regional parks with area between 2 to 40 hectares operate in regional scale and urban parks with area of more than 40 hectares operate in urban scale and their users are majorly national tourists.

Research Findings

We apply regression method to modeling this research. This technique includes codification and analysis of a mathematical equation in which the relation between a variable known as dependent variable which should be predicted so that independent variables related to dependent variables according to theoretical principles are determined.

We start the study of dependent variable from the subject of urban regions' attraction. The first index of urban regions' attraction is the amount of building licenses which are collected in two states of number and area of

¹⁰ Beasley, Larry. 2000. "Design for Living in Vancouver." Paper given at CNU 2000 Congress

licenses in each statistics' region. We first convert these indexes to dimensionless quantities between 0 and 1 to use them properly, then we use one uniform index by merging them.

The other index indicates regional attraction of population growth rate that is different from region to region; more population growth naturally shows more reception by residents from a special region, and is one of the important indexes of region's attraction. To use these indexes properly, we first change them to dimensionless quantities between 0 and 1, and then use them for numerical analysis¹¹ (Parsay. Excel. 2000).

In the next stage we will examine each region's green space, categorized according to urban influence scope.

Distribution way of urban green space is completely different in regions regarding space performance. So it seems necessary to examine different states of these spaces separately, specially urban parks with urban and even national type of addressee regarding the city's pilgrim-reception may even lack direct impact on urban regions, while neighborhood parks can have more impact on attraction of the region regarding wider distribution in regions' scope.

Information Analysis

¹¹ (Parsay, 2000)

Simple regression is used to predict the amount of one variable based on other variables. This technique includes codification and analysis of a mathematical equation in which the relation between a variable called dependent variable should be predicted and independent variable(s) related to dependent variable according to theoretical principles are identified. Linear model's Goodness of fit evaluation depends on calculation of standard error¹² (Kasraee, 2010).

In this model, null hypothesis means lack of linear relation or null slope of line, and the contrary hypothesis completes it and is like follows:

H0: $b_1 = 0$ null slope, no linear relation
H1: $b_1 \neq 0$ non-null slope, linear relation

- 1- Examining existence or lack of linear relation between the index of neighborhood parks and the level of urban regions' attraction:

In the first step, we start from regression model analysis of neighborhood parks indexes that show the most development in regions and seem to have the closest relation to urban regions' attraction and their growth:

¹² Kasraee, A. analytical and Inductive Statistics, 2010

Regression Statistics	
Multiple R	0.813198
R Square	0.661291
Adjusted R Square	0.6305
Standard Error	0.034573
Observations	13

	Coefficients	Standard Error	t Stat
Intercept	0.017531	0.01584	1.106714
X Variable 1	0.718192	0.154975	4.634252

According to the relation of null hypothesis, regarding freedom level of 11 confidence level of 95%, t-student coefficient from related standard table is the figure 1.796. T-coefficient is 4.6342 in above calculations. It is bigger than the table coefficient, indicating that the coefficient is out of confidence range and as a result the hypothesis rejection is impossible, which means proving linear relation between the two indexes of regional green space and regional attraction (measuring indexes are collected according to Excel software, shown with the same color in software outputs).

Now we will follow the manner of linear relation and line slope. In above line correlation coefficient is 0.6613 and line slope equals 0.7182.

- 2- Examining the existence or lack of linear relation between total index of green space and the level of urban region's attraction

In this part, we acquire total index of green space from total of all three park spaces of,

neighborhood, regional, and urban in each region and replace it in regression relation.

According to null hypothesis relation, regarding freedom level of 11 and t-student coefficient from related standard table –like former analysis- is the figure of 1.796. T coefficient in above calculations is the figure of 0.8684, smaller than table and indicator of entity of coefficient in confidence range, resulting null hypothesis confirmation, which means rejecting the linear relation between two indexes of total green spaces and regional attraction (measuring indexes are collected according to excel calculations, shown with the same color in software outputs). In above analysis, correlation coefficient equals to 0.0641, this demonstrates too weak a correlation according to analysis results.

<i>Regression Statistics</i>	
Multiple R	0.2532805
R Square	0.064151
Adjusted R Square	-0.020926
Standard Error	0.0574685
Observations	13

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.0611971	0.023305504	2.625863	0.023581
X Variable 1	0.1919381	0.221037464	0.868351	0.40375

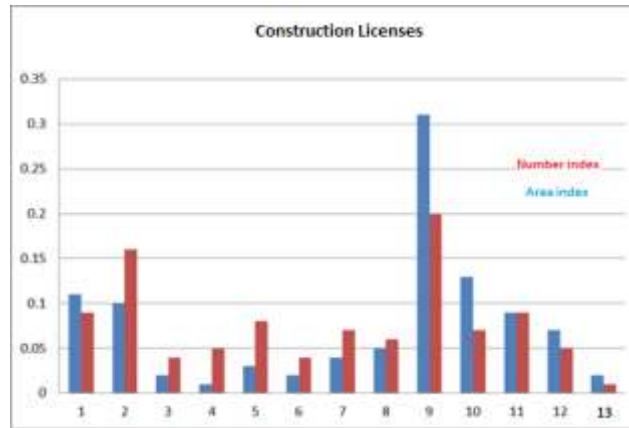


Figure 1: Chart of construction licenses, 2006, Mashhad

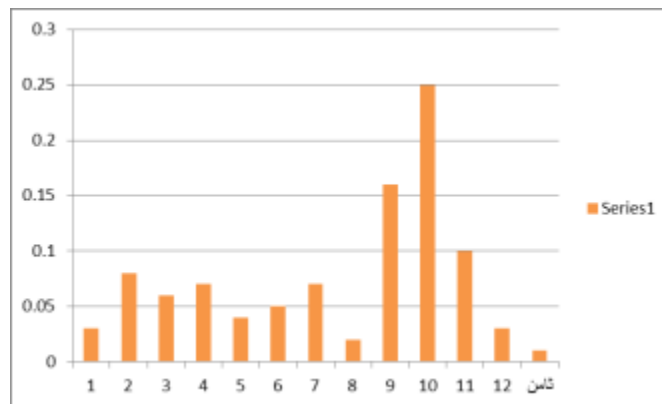


Figure 2: Chart of Mashhad urban regions population growth

We reach one single index by combining two indexes of regions' attraction and number of construction licenses.

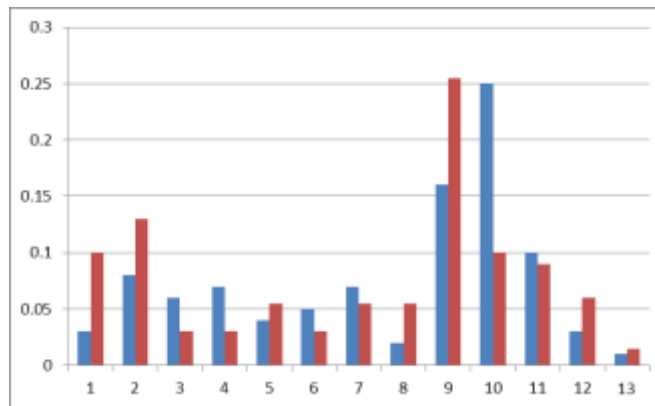


Figure 3: Common chart of growth rate and construction licenses

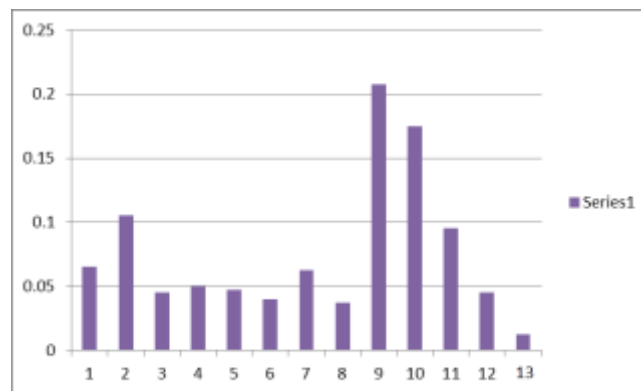


Figure 4: Chart of matched environmental attraction

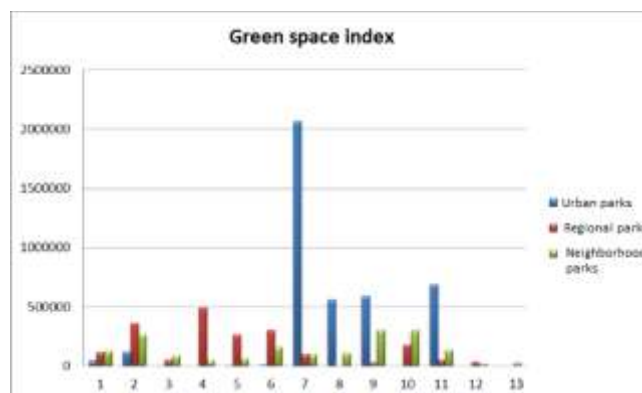


Figure 5: Chart of Mashhad urban green space divided according to function

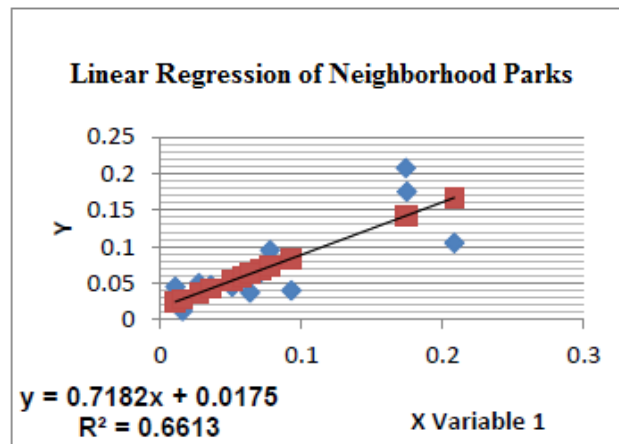


Figure 6: Chart of Excel output about linear regression of neighborhood green space impact on urban region's attraction

Table 1: Statistics of construction licences, 2006, Mashhad (source: Mashhad Municipal Statistics)

Regional attraction index	Licenses area index	Licenses' area	License number index	Number of residential licenses	Region
0.1	0.09	192086	0.11	240	1
0.13	0.16	189175	0.1	439	2
0.03	0.04	36235	0.02	117	3
0.03	0.05	25510	0.01	127	4
0.055	0.08	60121	0.03	229	5
0.03	0.04	28982	0.02	119	6
0.055	0.07	76115	0.04	189	7
0.055	0.06	92327	0.05	157	8
0.255	0.2	554655	0.31	543	9
0.1	0.07	235056	0.13	189	10
0.09	0.09	172189	0.09	261	11
0.06	0.05	119031	0.07	149	12
0.015	0.01	36237	0.02	26	13

Table 2: Statistics of urban regions' population growth rate on 2001-2006

Population growth index	Population growth rate	Population	Regions
0.03	1.06	187126	1
0.08	3.07	479907	2
0.06	2.34	308469	3
0.07	2.68	245611	4
0.04	1.61	160910	5
0.05	1.9	198817	6
0.07	2.61	222170	7
0.02	0.79	111614	8
0.16	5.81	295686	9
0.25	9.42	239728	10
0.1	3.68	197138	11
0.03	1.01	27909	12
0.01	1	32637	13

Table 3: Integration of urban regions' attraction indices

Total index of regional development	Construction index	Population growth index	Population growth rate	Population	Region
0.65	0.1	0.03	1.06	187126	1
0.105	0.13	0.08	3.07	479907	2
0.045	0.03	0.06	2.34	308469	3
0.05	0.03	0.07	2.68	245611	4
0.0475	0.055	0.04	1.61	160910	5
0.04	0.03	0.05	1.9	198817	6
0.0625	0.055	0.07	2.61	222170	7
0.0375	0.055	0.02	0.79	111614	8
0.2075	0.255	0.16	5.81	295686	9
0.175	0.1	0.25	9.42	239728	10
0.095	0.09	0.1	3.68	197138	11
0.045	0.06	0.03	1.01	27909	12
0.0125	0.015	0.01	1	32637	13

Table 4: Statistics of urban green space divided according to function (source: Mashhad Municipal Statistics, 2006)

Neighborhood parks		Regional parks			Urban parks	
Area	Number	Area	Number	Area	Number	Region
123986	31	115000	1	0	0	1
263219	53	364048	5	0	0	2
89010	16	513112	2	0	0	3
47379	7	494583	4	0	0	4
62234	9	265921	5	0	0	5
161867	31	304362	3	0	0	6
100649	15	99276	4	2070614	2	7
110645	15	0	0	560000	1	8
303992	58	27369	1	590359	1	9
305018	47	178913	4	0	0	10
135522	20	54560	2	688000	1	11
18126	6	33336	1	0	0	12
27214	9	0	0	0	0	13

CONCLUSION

According to linear regression analysis, we can express the following conclusions about the relation between green space and athletic space on residential regions' attraction:

In neighborhood level and scale of neighbors' units, a significant linear relation is seen between neighborhood green space levels (less than 2 hectares) located in residential

regions and attraction of these regions. This relation is observed with acceptable correlation coefficient and considerable linear slope among these two factors.

But there is no significant relation among total of neighborhood, regional, and urban green spaces located in cities' residential regions and the attraction of these regions. In other words, large parks with urban

functionality don't have a considerable impact on the attraction of the region where they are located. Most parks with smaller neighborhood scale, according to definition of smaller scale of influence, affect each region's attraction level in a defined and clear manner.

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