Spatial Analysis of Urban Form based on Building Density, Babol

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Extended abstract

Introduction

Urban form is defined as the spatial distribution pattern of human activities at a certain point in time. It is made up of the visible elements and components of cities and consists of natural and artificial elements as the spatial crystallization of the community activities. Awareness of the spatial form and the shape of the city can be one of the important factors influencing the success of urban planners and managers. The importance of this issue has led to the use of various methods for measuring urban form in recent years to determine the distribution of compression. In Iran, in urban development plans we have used building density as a means of curbing urban development and spatial equilibrium, but in many cases, the discussion of density and analysis remains only in the scope of the plan; because today in the cities in north of Iran there are cases of irregular urban growth and without planning. This can bring heavy expenses for the city managers. Knowing the density category and the analysis of cities with appropriate indicators are considered as one of the most important factors in achieving a sustainable form of city. For this reason, this study seeks to make a scientific analysis of these issues. We are to examine the physical form of Babol city as one of the northern cities of Iran that has grown significantly in recent years.

In general, the city forms can be classified into three groups: Density, diversity and pattern of spatial structure. The spatial structure of cities may be defined in different ways: It is possible to indicate monocentric land use versus polycentric land use, centralized patterns versus decentralized patterns and continuous development against discontinuous development. The "building density" is equal to the ratio of the underlying area to the area of land. The effects of increase in the density are considered on the urban form in the spatial structure, physical system, urban landscape, connections of the walls, and building collation. Density is an important indicator to declare sustainable urban forms that its advantages can be divided into three categories of economic, environmental and social aspects.

Methodology

Based on the nature of this topic and the objectives of the study, the dominant approach in this study is descriptive - analytical. The statistical population is 22 districts of Babol city based on

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the new division of the municipality in 2013. In this study, building density was calculated based on statistical blocks. Information needed to calculate the building density is achieved by dividing the total area of residential blocks infrastructure building density into the area of each block according to the Population and Housing Census in 2011. To display the amount of building density, we used the contour lines for the spatial analysis method. For measurement, we have used the spatial analysis models like Moran coefficients, analysis of Hot Spots Analysis, weight regression and Pearson correlation.

Results and discussion
Analysis of the relationship between building density and population indicate that in the central and northeastern part of Babol (regions 5, 15, 17 and 18), the population has more correlation with building density. This determines the building density in these areas. The analysis of population impact on building density show that the northern part of Babol (regions 1, 2, 18, 19, 20, 21 and 22) population density has a greater effect on building density. In other words, in the mentioned areas, the effect of population density on building density is higher than the other areas. The population density is an important factor in the building density. Analysis of hot spots suggests that the city of Babol has two cluster densities in six neighborhoods including districts of 2, 3, 5, 6, 14 and 16. Increase in the number of density clusters in the western part of the city, especially in the northwest, has led to an increase in construction in this part of the city. This is while the central and southern parts of the city are low in building density. The relationship between building density and distance from the center of the city, with coefficient (0.49), is a significant and inverse relationship. There is also a significant relationship between building density and population and residential density.

Conclusion
In the current century, the issues such as population increase, the need to settle in cities, population distribution, renovation of urban development, and public demand to live or work in a certain place are among the factors encouraging increased urban building density. Weakness of planning system the policy to increase building density not based on the reception capacities of the urban system based on demand and without limitations. The self-sufficiency policies of the municipalities led to building density as a key factor in housing and urban development policies. Obviously, the principle of construction congestion as an important tool to control urban planning and urban development has many negative consequences in Babol city. Inability to provide welfare and urban services as well as the inability of infrastructure to provide services to the growing population are the major threats to a healthy urban life due to increased building density in places with no capacity in the area with residential neighborhoods.

Keywords: urban form, building density, landuse, Babol.

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Social Impacts Assessment of Walkways on Citizens in Urban Old Textures (Case Study: South Khayyam Walkway of Urmiye City)

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Extended abstract

Introduction
In recent decades, many cities around the world have endeavored to improve life conditions of their central textures. One of the most effective approaches to this field is creativity of walkways. It is important to conduct development projects for different dimensions of urban walkways. Therefore, social-cultural and economic impacts of walkway will help urban planners and managers provide rational and accurate implementation of these projects. As a result, to the main challenges of contemporary cities are low vitality, reduction of positive social interactions, heavy traffic of vehicle in the streets, unique environment for citizens, safely, and comfort to the citizens. In this paper, the south Khayyam walkway in Urmia city has the potential in terms of social, historical and cultural values to provide a good place for implementation of development projects to analyze Social Impacts Assessment (SIA). Thus, fundamental issue of this research is the indexes affecting citizens in south Khayyam walkway according to SIA and relationship between main indicators and variables of research based on SIA.

Methodology
This is an applied research with post-implementation evaluation and analytical methods. In this research, documentary and survey methods have been used to collect the data. In order to assess the research validity, we designed questions based on the indicators and distributed the questionnaires among the experts familiar with the research concepts. They were asked to evaluate accuracy of indicators in questions. In the second step, the alpha coefficient of 0.845 was estimated using the SPSS. Therefore, given that the calculated Cronbach's alpha is more than 0.7, it can be said that questionnaire have the acceptable reliability. Sample size was determined using G Power software, consideration non-reversibility, due to uncertainty of the number of visitors to walkway and we collected 300 samples using random sampling method. Data analysis was performed using Structural Equation Modeling (SEM) in LISREL software.

Results and discussion
Standardized Modeling of Structural Equation Modeling at Liserl shows that each of the walkway indicators and social impact assessments has positive and direct effects. We determined the positive effects of the indices including social interaction (1.12), vitality (0.97),

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safety and security (0.94), social participation (0.84), social justice (0.82), citizenship identity (0.79), and social capital (0.66) as the effective indicators on the southeastern Khayyam pedestian, Urmia. The index of social interactions with a positive effect of 1.21 has the highest impact on the social sustainability of the walkway in the old and central urban textures in Urmia city.. In other words, it has more probable consequences for walkway sustainability. The results show that among vitality indicators, variable of mixing and variety of users has direct (0.49) and indirect (0.4773) coefficients. Among the components of safety component, social control variable have also direct and indirect coefficients of 0.51 and 0.47, respectively.. Among the variables of the identity of citizenship, the variable of age and historical significance the direct () and indirect coefficients are 0.66 and 0.51, respectively. Among the indicators of social capital index, the constructive confidence variable between citizens and local authorities has direct coefficient of 0.77 and indirect coefficient of 0.58. These are taken as the indicators that have greater direct impact on social aspects of walkway in the old and historical districts of Urmia.

Conclusion
The direct and indirect effects of the indicators and variables demonstrate that the social justice, social capital, safety and security indexes in South Khayyam walkway are faced with numerous constrains and obstacles. Some of the indicators such as social interaction, citizenship identity and citizen participation have a relatively good status. In addition, the social impacts of Khayyam walkway have been positive in terms of participation and promotion of social coherence, but it is poor in appropriate cultural infrastructure, safety and justice-oriented approach. Indeed, the effects of above mentioned walkway have not been enough to solve many social problems that have brought city growth into its old texture.

Keywords: Social Impact Assessment (SIA), urban walkway, old texture, SEM, South Khayyam walkway.

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The Strategies for Vulnerability Mitigation of Residential Context against the Earthquake (A Case Study for 6th Region of Tehran City)

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Extended abstract

Introduction
The hazards management is required in urban planning to reduce human death and casualties resulted from natural and human hazards. Urban vulnerability evaluation based on different dimensions of the factors is important ro determine hazard degree. It can reduce physical frame and socio-economic damage. The vulnerability analysis showed that there are different relations among social, biologic and physical processes which affect the society, namely population growth, urbanism, economic forces and environmental destruction. The research related to vulnerability has a vast range of different hazards in various scales. There are different categories pertaining to vulnerability which help to understand the various aspects of vulnerability. There are three aspects of vulnerability including bio-physical or confronting to hazards, social vulnerability (community and human oriented) and combined aspect. Disharmonic and irregular development in Tehran city together with its establishment in the vicinity of fault and unstable lands will cause enormous losses in the occurrence of a severe earthquake. As the region 6 of Tehran has a centrality in the city and presence of ministries, embassies, higher educational institutes, health centers and general hospitals, large economic companies makes it an important region in the country. In this study, the evaluation of earthquake vulnerability was conducted according to vulnerability of building, residential texture, habitation, physical frame and social and human dimensions. In this regard, the most important research questions are: How was the spatial distribution of vulnerability in physical frame in the region? What were the strategies for reduction of vulnerability of physical frame against the earthquake in the region? The purpose of this research is to introduce strategies for reduction of vulnerability of residential texture in region 6 of Tehran against the earthquake.

Methodology
In order to find out the vulnerability reduction strategies, the method is conducted in two stages. In the first stage, the vulnerability of residential texture was investigated in different dimensions including building, habitation, physical frame, and social and human aspects. Statistical population was family heads of the region 6 which were 331 families according to the proportion of population of the region. The measurement was conducted by questionnaire and the validity was approved by experts. The validity of awareness, preparedness and reaction against the earthquake were 0.682 and 0.792. The ideas of the experts were used two times in this study. Firstly, we used the opinions of 9 academic people, 4 PhD students in geography and

urban planning, 5 academic persons and 3 PhD students in municipality engineering and 3 academic people and 3 MSc students in disaster management. The opinions were used to calculate the weights for FUZZY AHP models. Secondly, the opinions of 6 academic people in geography, 3 academic people in municipality engineering, 5 people in disaster management and 8 people from municipality in different districts of the region 6 of Tehran city were also used to determine strategies for vulnerability reduction. FUZZY technique and Kriging interpolation method were used to evaluate vulnerability and spatial analysis, respectively. In addition, Fuzzy AHP was used to determine the importance of the factors employed and the total vulnerability in the region for five dimensions.

Results and discussion
The building, habitation, physical frame, social and human dimensions were analyzed to make a zonnation of vulnerability. The results showed that the vulnerability of the Amirabad, Nosrat, Ghezel Ghaleh, University of Tehran and Laleh Park districts were from 0.60 to 0.73 (48 percent out of 100) as the low vulnerability. The values for Shariati, Argentina- Saei, Behjatabad and Gandi districts were ranged from 0.4 to 0.60 (45 percent out of 100) as moderate vulnerability. In the second phase, to recognize vulnerability mitigation strategies, we declared strength, weakness, opportunity and threat using questionnaire for the 22 experts and academic people. Eventually, the strategies of vulnerability mitigation were recommended by SWOT model for the region. The results revealed that the final score was 2.57 for interior factors. Relative stability of building structures has a weight of 0.296, proper distance from the major ways has a weight of 0.284, regular texture and penetrable transit network and proper distance from tributary ways has also a weight of 0.264 as the most important strength points. In addition, the high density of population with a weight 0.112, oldness of buildings with a weight 0.065 and the high percentage of built relative to the surfaces were recognized as the most important weakness points. The final score in the matrix of exterior factors was 2.514. When the score was less than 2.50, it indicates the favorable conditions to reduce vulnerability of physical frame against earthquake. Moreover, the total scores of opportunities and threats were 1.866 and 0.628, respectively. The most important opportunities were high number of educational centers with a 0.156 score. The attitude of respondents to the role of collection and improvement regulation for reduction of earthquake hazard impacts is scored0.152. The tendency for participation in educational courses to prepare against earthquake and the evacuation of the region at night is also scored 0.148 by the respondents.

The most important threats were destruction of equipment house with a 0.068 weight, access to first aid box and fire extinguisher with a 0.066 weight, and the existence of installation networks in the region with a 0.064 weight.

Conclusion
According to cross matrix elements of SWOT analysis, the aggressive type strategies can be selected for this study area. Accordingly, the most important strategies were as follow:
1. Extending the buffer zone for national and transnational buildings due to high density of population in the region for reduction of probability hazards,
2. Widening the passages according to buildings function and density,
3. Transferring vital centers to the places in the vicinity of crisis management center, and
4. Increasing the public awareness to understand damage for enhancing rescue actions.

Keywords: strategies, vulnerability, residential context, region 6 of Tehran City.

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Assessment of Satisfaction with the Quality of Urban Management Services in Marginal Regions (Case Study: Islamabad City Karaj)

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Extend abstract

Introduction
The Islamabad of Karaj is one of the fine-grained and interconnecting urban area and one of the most problematic areas in Karaj City. Most residents of these tissues are benefited from direct and indirect urban management services. This research has been carried out in Islsmabad as a metropolitan area with urban services in the city of Karaj. Accordingly, the overall objective of this research is to measure residents' satisfaction with the quality of services in the Islamabad neighborhood of Karaj. The overall objective of this research is to:
- Provide a functional model for assessing the quality of services provided by urban management
- Determine the citizens' satisfaction with the quality of services provided in the Islamabad neighborhood of Karaj

Based on the above objectives, the question arises whether urban management has been able to meet the expectations and perceptions of citizens in the Islamabad neighborhood in different dimensions.

The hypothesis states that there is a statistically significant difference between the type of service provided by urban management in the current situation and the expected perceptions of the quality of services provided in the five dimensions of the SERVQUAL model.

Methodology
The statistical population of the study is rural people in Islsmabad. The sample size is 328 according to Cochran formula. The main tool for collecting field research data is a questionnaire which asks the dimensions of the quality of SERVQUAL services based on the surveys conducted by the authors and the requirements of services provided by urban management by the researchers to measure it from the scale of PARASURAMAN and its colleagues. Hence, the respondents' expectations and drafts of urban management services were evaluated in five dimensions of sensitivity, reliability, assurance, response and empathy. For statistical analysis, we used nonparametric tests, Friedman tests, T test and pair test.

Results and discussion
There is a significant difference between the average satisfactions of respondents with their expectations. As their level of literacy has increased, their expectations have also been increased. Therefore, it can be added that the highest level of service quality gaps in the SERVQUAL model belongs to a group with a university degree and the lowest gap is related to those who have highlighted primary level of education.

The difference between the average expectations and perceptions of citizens about the

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effectiveness of urban management performance in creating judicial justice is significant at 99% confidence level. It can be said that urban management, in general, failed to meet the expectations and demands of citizens. For the final analysis and ranking of the SERVQUAL model components, the expectations of respondents about the dimensions of the effectiveness of urban management performance have been used through Friedman ranking test.

The non-parametric WILCOXON test has been used to assess the significance of the effectiveness of urban management practices on the quality of urban services. Urban management has only been able to meet the expectations of residents living in the context and in other dimensions the average expectations are significantly higher than the average perceptions of respondents. The statistical analysis of the data shows that the highest level of service quality gap belongs to the SERVQUAL model's empathic dimension, which can make it difficult for the management to have access to long-term urban management problems. The quality gap in accountability implies that citizens do not have easy access to city executives to state their opinions, criticisms and suggestions in various areas. The quality gap in terms of assurance shows that the performance of promised services and the provision of services have not been fully operational as soon as possible and the behavior of managers has failed to meet the expectations of citizens living in Islamabad.

Conclusion

Therefore, the present study seeks to find an applied model of the SERVQUAL method to measure citizens' satisfaction with the quality of services offered by urban management. The findings of this study showed that SERVQUAL model is an appropriate tool to measure the quality of services provided in the Islamabad neighborhood of Karaj. The results of this research showed that the dimensions of the quality of urban services can be ranked in importance for the urban population of urban texture. Thus, one can assess the quality of urban services from the citizen's point of view. The results of this study showed that there is a significant difference between the satisfaction levels of the subjects with individual characteristics, so that with an increase in the level of literacy, the level of citizen's expectations can also increase and their level of perceptions can decrease. In fact, respondents have a very different level of education, perception, and expectation of urban management services according to their type of job. This has been very influential on their satisfaction with the quality of urban services. With increase in levels of citizenship, their expectations are increased, and the highest quality service gap in the SERVQUAL model belongs to the group that has university education. Statistical analysis and inference from the content of the questionnaire indicate that there is a gap between the expectations and the perceptions of respondents in all aspects of the quality of service. In the SERVQUAL model, accountability means willingness to help customers and provide instant services to them. The existing gap suggests that citizens do not have easy access to urban management for their ideas and suggestions on urban issues. The gap in the accountability dimension implies that citizens cannot conveniently have access to urban managers and that citizens are not able to talk to urban management about their ideas and criticisms of various civil, social, and economic issues in urban neighborhoods.

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A Comparative Analysis of Security Level in Urban Parks from Viewpoint of Spatial Justice (Case Study: Mashhad, Iran)

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Extended abstract

Introduction

Urban expansion and development of modernism approaches involves more green spaces to improve living conditions of residents. Parks and greenbelts are the main factors forming social stability as one of the development indexes. When there is safety and peace in these places, one can effectively make use of such environments. Hence, because of the security in these spaces, we can see concerns about the recent events at this location, especially in metropolitan parks. Unbalance in the design quality, providing services and facilities make these places undesirable. According to the research on the security of the parks, the environments are able to influence the citizen's satisfaction. Therefore, in the present study we conducted a comparative analysis of security level in the urban parks from viewpoint of spatial justice. The study area is consisted of Mellat and Koohsangi Parks in the developed districts and Vahdat and Raja Parks in less developed districts of Mashhad.

Urban public spaces are thhe basic component to make a public city with social concept. Such spaces as places of calmness and comfort can be of significant importance for managers and city planners. In socio-cultural perspective, public spaces are the places for building and strengthening the outer relations, interactions, and confrontation of social change, where different groups with different desires are gathered together. In this respect, one of the most important conditions is that you need to have a public space and mutual social interaction and communication to the people in public spaces. The urban parks, as one of the most discussed spaces, play an active role in the health of the citizens. According to recent studies, the use of urban spaces such as parks has a direct relationship with a sense of security. Thus, one of the main missions of urban planners and managers in this area is to create securely spaces through research, and planning.

Methodology

This study is an applied descriptive-analytic research using library and field method for data collection. Using the experts' recommendations, 22 criteria were determined for assessing the level of security. In order to weigh the criteria, hierarchal model was used. For ranking the parks, we used Grey method and the primary data were obtained via the questionnaire. The number of questionnaires were set 384 using Cochran's Formula. For moree confidence, we completed 400 questionnaires.

Results and discussion

Spatial justice issues in recent years are to achieve sustainable development goals among

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experts, particularly planners and urban managers. Since urban public services such as parks construct the form and nature of the physical, social and spatial features of a city, injustice in distribution of these services put numerous challenges to urban management. Optimal use of these spaces takes place when a person feels secure in the place. Thus, the aim of this study is to compare the spatial equity approach with security in urban parks. The results of this research show that the security condition in the parks of developed districts is far better than those of the less developed districts, to such an extent that in terms of the security perspective, Mellat Park has the highest and Vahdat Park has the lowest security.

Conclusion

To enhance condition of the parks according to the indicators mentioned in the proposal, some options have to be considered in management:

A decrease in the security level of urban parks can be resulted from a lack of security applications near the park and down the street. Unfortunately, this is regarded in none of the parks we studied.

Many addicts, drug dealers, and homeless people are staying in Vahdat Park, especially in the eastern side of the park. Thus, the security of the Park is greatly reduced.

Something noteworthy about the Vahdat Park is blind spots in the park due to irregularities, improper placement of trees and buildings, benches and unsuitable places of facilities. So, a redesign is recommended. It should be noted that the nation's blind spots can be seen in the park, but due to the presence of CCTV cameras and traffic wardens, it would not make critical security problems in the park.

One of the reasons for low security of Raja Park is regional security issues. There are 6 districts as the areas most fertile for crime and the most insecure in Mashhad. As a result, most of the citizens avoid going to the parks. Researches in this area can improve the level of security that lead to proper solutions.

Keywords: park, security indexes, spatial justice, Mashhad City.

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Role of Urban Signs in Promoting the Place Attachment with an Emphasis on Citizens Mental Image (Case Study: Sanandaj City)

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Extended abstract

Introduction
In recent decades with the development of industry and technology, we can see growth and development of cities. Urbanism and architecture today, regardless of climate, culture and geographic location, are being formed similarly in different places. The consequences of neglecting the identity of cities include creation of artificial environments and reduction of social interaction, and citizens' apathy towards their living environment.

The studies on perceived quality of urban environments are looking for the ways of establishing harmonious relationship between people and cities. In the contemporary city, this harmony cannot be seen properly in the relationship between people and elements that are important in urban legibility. The most common definitions of landmarks indicate that they are some recognizable natural or man-made features used for navigation, features that stands out from their near environment and are often visible from long distances. In urban studies as well as in geography, a landmark is furthermore defined as an external point of reference that helps orienting in a familiar or unfamiliar environment. It should also be noted that we know urban landmarks as significant elements in both urban landscape and image. They are the most fundamental pieces of spatial information as they are used for a wide collection of tasks related to the description, understanding and reasoning about our physical environment.

Semiology and its effects is one of the new approaches that recently have become very popular in urban studies. Semiotics principles of cognitive science are rooted from many cognitive sciences, relying on the concept of connotation. This causes the relationship between architectural spaces with the audience. So, different aspects of the syndrome of semantic, functional and emotional aspects are considered simultaneously in the form of perceptual space. This can make space meaningful and create the sense of place for the audience. Emphasizing signs can increase the citizens mental image and legibility of the city.

Methodology
This study examines the role of signs in the perception of architectural space and its role in improving semantic concepts of sense of place. Space is a phenomenon which human give meaning to it during his life and is also dependent on that. Place attachment is an intersection point between physical activity and subjective components in space. It changes the space to the

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place by specific sensory and behavioral characteristics of people. Urban signs with different semantic, functional and physical dimensions perform an important role in improving the quality of urban spaces. In this paper, Sanandaj city is explored as a case study in terms of existence of signs, the effects of environmental meanings on different groups of residents and factors to increase sense of attachment to a place. The objective of this research is to study the effects of meanings embedded in urban elements and signs on creation of people's environmental cognitive maps and place attachment. In this research, we utilized mixed-method approach, where aforementioned influential factors extracted from literature review, to form the qualitative part of the study. In the quantitative part as the validity of the research, Sanandaj City Residents were studied and evaluated. In other words, the study examined the verification of extracted theoretical framework from literature review, through conducting a survey in quantitative part. In this regard, a questionnaire was used to gather the data about citizen's attachment in the mentioned signs. Ultimately, using SPSS software the data were analyzed through descriptive and inferential statistical methods. The sample size was 200 people. This is conducted by using surveys, cognitive maps, fieldwork interviews and photo-analysis method in the city.

Results and discussion
The results show that between attachment to place and perception and understanding a place, there is a positive relationship, as one can recognize himself by that. Those signs have features such as place in historical context with distinction form of periphery and with landuse religious – commercial functions like urban elements. In mental maps, people of Sanandaj are the most important. Based on TOPSIS technique, the sign «general mosque» is the largest and the sign «Integrated Communications» is the minimal impact that affect attachment to place.

Conclusion
Among the important factors of attachment to place, the four top signs are including general mosque, Abidar Park, Azadi Square, Asif Market. In general, given the differences in the average values of the top 10 signs, the role of semantic factors toward two functional and emotional factors can be helpful in promoting place attachment in the city of Sanandaj. Analysis of cognitive maps of Sanandaj revealed that these features, besides affecting cognitive maps, can work as a language through which the residents can connect themselves to their environment. Therefore, urban designers can make environmental design and transformations with regard to the elements that are meaningful in private and public life of people and provide an opportunity to create place attachment.

Keywords: urban signs, mental image, place attachment, sense of place, Sanandaj City.

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Spatial Analysis of Deterioration in Qom's Neighborhoods Using Geographical Weighted Regression

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Extended abstract

Introduction
In just a few decades, urban areas across the world in both developed and developing countries have become increasingly deteriorated. In other words, it is a worldwide phenomenon. Deterioration and urban decay are created and aggravated by many factors and variables and considered as one of the most severe environmental and socio-economic problems of recent times. These areas were occupied by poor immigrants and low income groups. Thus, the areas are faced with physical deterioration, economic and environmental problems. Undesirable changes in urban environments make living conditions more difficult for citizens. What it is interesting in this research is the fabric that covers a decline in the area of 1074 hectares of Qom. This is allocated to about 6.8 percent of the city's legal limit and placed a population of over 220 thousand people. The process of physical, social and economic deterioration is confronted with inner city and central neighborhoods that can be explained in various ways. This process seems to be irreversible disclosing inequalities, poverty and serious environmental impacts that need to be systematically assessed. This study focuses on the causes and effects of urban decay. Therefore, the principal aim of this study is to explore the impacts of deterioration and suggest appropriate urban management interventions. Thus, analysis of spatial patterns of deterioration and spatial relationships between deterioration and its influencing factors is necessary for better understanding of effective factors and improving performance of urban renewal management. Hence, in this research we employed spatial statistical methods to analyze the spatial patterns of deterioration and its influencing factors.

Materials and methods
The research is conducted using descriptive and analytical approaches based on library research, documentation and data from Iran statistics Center (2011). In the present study, the city of Qom and 51 decline Neighborhoods have been investigated. In this regard, spatial statistics and geo-statistics methods are employed. The results obtained from Factor Analysis (FA) are used for identifying geographical patterns (Cluster, scattered and random) by using Moran's spatial autocorrelation statistics. Also Getis-Ord general G statistics and Cluster and Outlier Analysis (Anselin Local Moran's I) statistics, respectively, are employed for detecting High/Low value clustering and mapping the cluster and outliers. All of the mentioned statistics are carried out in ArcMap 10.3.1 software.

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Result and discussion

The deterioration indicators in the current study are divided into several dimensions: economic, social, and physical aspects due to their extensity and the opinions of experts. The results of the application of Moran's index on the spatial distribution of deterioration show that this coefficient is positive and equal to 0.314. Representing the spatial distribution of the deterioration is cluster. Since Moran index can not identify spatial diverse patterns, General G Statistic analysis covered the defects. General G statistic showed that neighborhoods with high deterioration together have a high concentration of the cluster. About 6.29 percent of the deteriorated area is devoted to hot high-cluster and consists of five neighborhoods. However, medium clusters are 75.29 percent and includes 36 neighborhoods. Since the deterioration is dependent on the local and spatial variables, Geographically Weighted Regression (GWR) was used to investigate the influencing factors on the deterioration. The amount of deterioration were considered as dependent variables and physical, economic and social indices as independent variables. The results showed that the model with $R^2 = 0.92$ and R^2 adjusted equal to 0.84 has acceptable accuracy in modeling the spatial relationships of effective factors on urban deterioration. Moran's I of residuals GWR refers to insignificant autocorrelation. The results of the effectiveness of each of the indices on deterioration shows that the variables of impermeability, microlithic state, the quality of infrastructure, household density, land prices, and leased property have increasingly affecteddeterioration. Other variables were not significant and interpreted. According to research findings, physical, social and economic problems in the mentioned old area are considered as the most affecting issues. Therefore, to organize the region, the mentioned factors can be helpful in urban improvement planning.

Conclusion

Urban old areas created a suitable living space for their dwellers, due to technological improvements and changes occurred in environmental, social and economic requirements. Thus, the areas can no longer have the same performance as they once did. Once, these old areas were the heart of wealth and power of cities, but under current conditions (in almost all cities) and because of having poor infrastructures and urban services, they are considered as disorganized urban neighborhoods, but still important in the lives of the residents. Therefore, it is important to find out how the recent factors can affect these neighborhoods. Based on the obtained results of the present study and also based on the spatial auto-correlation indices, the concentration of urban deterioration in Qom city is clustered. Factors affecting urban burnout include variables such as: impermeability, microlithic, the quality of infrastructure, household density, land prices and leased property. As a result, social, economic, and physical planning is necessary to the participation of citizens to improve the quality of life. Therefore, these findings can show scientific basis for policy in order to reduce deterioration and its effectiveness. Evaluation of the benefits of urban-regeneration programs with appropriate spatial indicators is a fundamental step for identifying specific planning measures in future urban transformations.

Keywords: spatial analysis, urban decay, Qom City, Geographically Weighted Regression (GWR).

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Urban Planning to Promote Women Health in Mashhad using Vitamin G

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Extended Abstract

Introduction
Due to the urbanization growth, a greater proportion of the world's population is being exposed to the risks limited to urban areas. It is essential to understand these effects on the health. According to the conducted studies, urban green spaces play major roles in health improvement. A relationship between green space and health is also verified, and green space is called Vitamin G. Urban green spaces are positively related to physical activity, physical and psychological health and should be considered as the main source of health. Women have unique health conditions due to biological and behavioral/social differences. They use health service system more than men during their lifetime. Investment in women's health has a significant effect on the health and well-being of the next generation. Women have more depressive symptoms than men; and there is a high proportion of obesity with symptoms of depression. Perceived public health is also weakened by increasing distance from green spaces; and this is very significant in women, whereas changes are not significant in men. According to the present research, an assessment was conducted on the effects of Vitamin G on women's physical and psychological health in Mashhad city. A structural equation modeling was utilized in this field. Understanding the nature of these relationships helps urban planners make better decisions to improve urban green space. Generally, urban green space stimulates a suitable field for physical activity leading to physical and psychological health. Furthermore, psychological health affects physical health. On this basis, we draw the research model.

Methodology
This study is an applied research in terms of objective, and correlational with regression type based on the nature; and quantitative in terms of method; and it was among the cross-sectional survey studies. Structural equation modeling was also used to fit latent variables. A questionnaire was used to collect data. The questionnaire consisted of four dimensions namely physical and psychological health, physical activity and green space. Four variables namely protection, facilities, availability and access were used to assess the green space. Statistical population covered 380 women of Mashhad, those who were selected as samples by Cochran's formula, completed then 450 questionnaires. Appropriate ranges were determined for completing questionnaires according to the following procedure:

Based on the statistics from Mashhad Municipality in 2013, the first cause of Mashhad

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women death was blood circulation disease, and 2443 people were died from this disease in that year (35% of total died people). Their house addresses were first obtained from the relevant organization. In order to determine the spatial distribution, location of houses of the dead persons was shown by points in GIS software, 1680 out of 2443 addresses were complete. Accordingly, the obtained spatial distribution map and income classification map of Mashhad were overlapped, and then 9 neighborhoods were selected for completion of questionnaires based on density of residential points and income classification. The 400 completed questionnaires were analyzed through Amos software. It is worth mentioning that the green space refers to urban parks above one hectare in area. Distance of 1600 meters from green spaces is also considered as a critical distance between the parks and sidewalks. Therefore, 1600-meter buffers were obtained from the parks above 1 hectare in target neighborhoods. It was indicated that the selected neighborhoods were inside the range.

Results and discussion

According to the obtained results, Body Mass Index (BMI) was equal to 27. This value indicates the extra weight of studied population. The average age of the participants was 35.5 years; and the appropriate age of this group was 24 years according to the BMI calculation. Therefore, people were overweight.

Analysis of the method for fitting hypothesis model with unobserved data is an important component in application of structural equation model. Various indices are usually used for fitting evaluation including the RMSEA and Chi-square as the important indices. In the present study, these two of RMSEA and Chi-square were obtained equal to 0.074 and 0.02, respectively. Based on the results, the total fitness of the model was within the acceptable limits. In Mashhad City, green space had an impact of 0.37 on women's physical activity. The physical activity had an impact of 0.2 on physical health and impact of 0.4 on psychological health. Furthermore, psychological health had an impact of 0.6 on the physical health. Among dimensions of green spaces, protection and facilities had the highest effects.

Conclusion

Other findings of empirical research also indicated that the urban green space was positively related to physical activity which partly played an intermediate role in a relationship between green space and health. Green space increased physical activity that results in lower levels of obesity. Thus it was essential to improve the women's long-term health. Results of the present research were consistent with research by other experts.

Results of the present study indicated that the green spaces had an impact on 54 women's physical activity which was affected by their physical and psychological health. Since most of participants lived in apartments and were overweight, it was very important to provide infrastructures for physical activities. Therefore, the research findings have important applications for urban planners and managers because the environmental quality and nature of development are among the main factors of health. There is a historical relationship between urban planning and health. Improvement of urban green spaces is very important in low-income areas because women have less physical activities in lower-income areas and, thus, utilization of green spaces can reduce the health inequality between income areas.

Keywords: urban planning, health, women in Mashhad, vitamin G.

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Effects of the Improvement of Bus Transportation System Policy in Central Tehran (Case study: Region 12)

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Extended abstract

Introduction
As urban centers grow, careful strategies for development of public transport are required to ensure that the residents have adequate access to public transportation. It is true that Central part of Tehran is an important section of the city as it plays a ground role in commercial, political and administrative issues. It generates a large number of trips every day due to the location of Bazaar and its spatial and environmental effects, concentration of institutional and political centers (e.g. embassies, administrative buildings), museums and tourist destinations of old Tehran, and educational centers. This results in transportation difficulties such as traffic congestion.

Besides, high volume of traffic is the main contributor to air pollution in Tehran, particularly in winter seasons. Indeed, city center is quite more affected from this problem. Taking a glance at proportion of modes in Tehran shows that 53 bus lines out of 250 bus lines either pass through this region or their first station inform there. Same is true for 16 metro stations and 43 taxi lines. However, just less than 5 percent of bus transit lines moved more than 3000 passengers. About 47.5 percent of stations have an inconsiderable amount of transferring volume just less than 500 per day. Investigation about bus headway regularity and service performance shows that this system in this region has long headways. It operates with average headway of 15 minutes particularly in the evening. This can force urban and traffic managers to revise the bus transit system. Therefore, 3 out of 10 key solutions were introduced via Delphi Technic to improve bus transit system. Then, these three actions were examined to know how and to what extend they can affect region 12.

The purpose of this paper is to identify the most important possible measures for revising the bus transit system and to examine the effects of this policy on improving transportation, environmental, physical, and socio-cultural dimensions in region 12.

Methodology
A mixed research method (quantitative and qualitative) is used in this research. In the first section, the most important solutions for this policy were identified applying qualitative method and through Delphi technique. The viewpoints of transportation and traffic engineers, urban planners and managers are extracted through a number of 40 questionnaires with open questions. They were asked to introduce at least one and maximum three key remedies for improving the bus transit system in region 12. Total 36 questionnaires were sent back; 3 out of

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10 key solutions were introduced via Delphi Technique to improve bus transit system. These solutions are:

1) Changes in the location of passenger hubs within the region and transferring them to the boundaries of the region,

2) Reduction in the number of bus routes which has overlap with other routes and development of the commuting bus transit line in connection with hubs in boundaries of the region,

3) Establishment of special bus routes.

In the section 2 of the research, a quantitative research method was conducted. Another questionnaire was designed with 41 questions in five categories including personal, transportation, environmental, physical, and socio-cultural aspects. This is to address obstacles and disadvantages of this policy and investigate the operational potentials of these actions. Then, 5 professions were asked to check the questions to ensure that the questionnaire is valid. Also, the reliability of questions was tested using Cronbach's Alpha. The value is 0.73 which indicates that the questionnaire has a high reliability. Approved questionnaires were sent to 40 persons of transportation managers and experts who worked in municipality and traffic and transportation organizations in the region 12. The collected data was investigated through descriptive and inferential statistics. Then, using Chi-square test, a significant correlation was found between the research indicators. The three-dimensional transport, environmental, physical, and socio-cultural indicators were ranked using the Friedman test.

Results and discussion

The results show that the socio-cultural, transport and physical-environmental dimension will receive the greatest impact from this policy. Reliability of bus transit, convenience (for juniors, children, and people with disability), reduction in air pollution, development of public transport, increase in the revenues for region 12, integration of transportation network, increase in the number of trips, heightening the local access, decrease in the depopulation of city center, falling the rate of crime, and improvement of the inner operation of bus transit system within the region are among the aspects which are the most influenced by this policy.

Conclution

Investigation about disadvantages of this policy reveals several major factors affected the necessity of coordinating the bus system of other regions which are in vicinity of region 12, and increase in the number of trips. However, the most important obstacles to the implementation of this policy are the interference of the tasks of the decision-making bodies, and the absence of the specialist personnel.

In the following, the experts were questioned about the potential of each of the three actions of the policy and the results showed that the location of passenger hub in the boundaries of the region has the highest potential to operate at 2.80. Development of the commuting bus transit line connected with the bus hubs in the boundaries was in the second rank of importance (1.86), while introducing special routes is ranked the least point with 1.48. Our result is consistent with the findings of Verma (2013 and 2016) for Bangalore where it is proved that improving bus transit system lengthens the travel time, and reduces the usage of un-renewable energy sources.

Keywords: bus transit system, hubs, especial bus routes, region 12.

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Feasibility Study of the Pedestrian Movement in the Central Part of Qom City using VIKOR Model and Space Syntax Theory

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Extended abstract

Introduction

In the late 1980s, a pedestrian approach to reduction of car ownership came in the opposite direction of urban automation, planning to build human-like cities closer to the scale of space design. As a new approach, pedestrian movement encouraged urban residents to use fewer cars by increasing congestion in urban areas and developing a public transport network. However, in many cities of Iran, urban sprawl development and rapid growth has surpassed the use of cars and motor vehicles intensifying the domination of the cavalry in urban roads. Therefore, in recent years, we have witnessed creation of various types of pedestrian spaces in the country.Some of the saces have been successful and in many cases unsuccessful. One of the reasons for justifying these unsuccessful experiences is that position of each experience is disregarded in the spatial structure of cities and was ignored by planners and designers. This study was investigated to select the appropriate pedestrian roads in the central fabric of Qom city. Hence, analysis of spatial configuration requires an approach that can respond to the complexities of the physical-spatial environment and help to understand the structure and spatial form of modern cities. In this study, the space syntax approach was used to study and analyze the urban spatial structure in the central part (District 7) of Qom. Accordingly, two key questions are raised, which the present research attempts to answer: a) how we can select appropriate urban roads? b) What are the major components affecting the pedestrian capability of the streets in the study area and which components have higher importance? The city of Qom as the second religious center in Iran attracts millions of pilgrims annually. The establishment of commercial centers, religious sites, educational facilities, hotels and numerous hotels around the holly Shrine of Masoumeh, due to their close proximity to the shrine, has made it possible for a large number of pilgrims to travel and settle in this context. Therefore, the pedestrianization of some of these streets can increase the sense of safety, promotion of the social role and enhance the spiritual sense of the passageways. It is important to consider the features of the artistic environment as well as the structure and configuration of the city of Qom to identify the spaces with the greatest potential for creating pavilions.

Methodology

This research is conducted in three sections. First, to analyze the urban configuration, axial lines of Qom were prepared using AutoCAD 2007. In the next step, the axial lines for spatial analysis

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were depicted in the AutoCAD software. This map was analyzed in the UCL Depthmap10 software. Furthermore, VGA analysis was used in this software for visual analysis. Two criteria for permeability and land use mixing were also evaluated using Shannon entropy method in GIS. Each of the indices was weighted by Shannon entropy. Finally, by integrating the criteria and ranking using the VIKOR method, the studied axes were ranked for pedestrian capability.

Results and discussion
In this study, the axial map of the city of Qom was obtained by drawing 18292 lines in the AutoCAD software. Based on the centrality of the shrine, important streets were selected by immediate relationship with the shrine. Accordingly, five streets of 19-Dey, Enqelab, Taleghani, Imam Khomeini and Eram were investigated in this study.

Integration (Rn)
Through this parameter of integration, one can determine the position of each space in its space hierarchy. Therefore, the streets with the highest degree of integration in a city map represent the city's structure and flows. Therefore, it can be mentioned that Eram has access to all parts of the region and the city. Other streets such as Enqelab, Imam Khomeini and Taleghani and finally 19-Dey, where there is a slight difference in the value of integration, are considered the main artery of the second degree for movement.

Connectivity
Enqelab Street with 53 connections has the highest degree of spatial connectivity than other streets. The streets of 19-Dey (45), Eram (23), Imam Khomeini (15) and Taleghani (14) have low connectivity parameters.

Integration (R3)
Integration (R3) is an important tool in the city to understand pedestrian movement. Thus, the spaces with high local integration are spatial spaces with high pedestrian potential and high walkability. In this analysis, it was found that Enqelab Street had the highest local integration (4.42) and Taleghani Street had the smallest (3.16) of this parameter. This indicates the ability to move Enqelab Street in comparison with other streets.

Choice
Choice parameter can be used as a criterion to assess the preference and potential of moving urban spaces. The studies show that the highest degree of choice parameter in the region and even somehow in the city of Qom is dedicated to Eram Street.

Intelligibility
In the theory of space syntax, when the characteristics of integration and connectivity parameters are checked in relation to each other, the ability to understand the paths by the residents will be determined. In this study, Enghelab has highest degree of intelligibility (26.97) among the other streets and 19-Dey Street with 22.93 in the second rank.

Control
The higher control of a street means that the space has high spatial integrity; it is influenced by walking and encourages pedestrians to watch. According to a space syntax analysis, 19-Dey Street has the highest degree of control (20), and Enqelab Street is in the second rank with 19.50, Eram with 9.20 degrees of control is in the third rank.

Spatial Accessibility
This parameter is obtained by calculating the logarithm based on the 10 Choice parameters (LN10 Choice). The results indicate that Eram is ranked first with 7.94. Moreover, Enqelab with 7.84 and Imam Khomeini with 7.52 are ranked in the second and third places.

Mean Depth
The results indicate that the highest Mean depth between the streets is on the 19-Dey Street with an average of 14.70 degrees. The streets of Taleghani (13.39), Enqelab (13.33), and Imam Khomeini (13.27), with a very small difference, are ranked second to fourth, in order. Eram Street with 12.82 degrees of MeanDepth parameter is more favorable than other streets.

Landuse Analysis
In this part, the degree mixed use is applied. This is calculated by the entropy index. The results indicate that Enqelab Street with an entropy coefficient means that (1) has the best mixing status among the streets. Taleghani (0.77) and Eram (0.22), 19-Dey streets (0.19) and Imam Khomeini streets (0.00) are ranked two to five, in order.

Permeability Analysis
The results indicate that 19-Dey has a higher utility in terms of the average number of intersections (3.40) compared with other streets. In other words, it has more intersections (47 intersections) than other streets.

The results show that the most appropriate average length of the block between the streets has been allocated to 19-Dey Street with 37 meters. Furthermore, compared with other streets, Eram has a maximum block length of 65 meters. In this study, Taleghani and Imam Khomeini streets with 48 and 45 meters in block length are in the next category.

Analysis of Visibility and Landscape Criteria
To analyze the visibility and landscape criteria in this study, the degree of "visible step depth" has been investigated. Eram Street with an average of 1.20 degrees of visibility of step depth has the most favorable value relative to other streets. The degrees of visible or the streets of Imam Khomeini (1.35), Enqelab (1.90), Taleghani and 19-Dey reach 2.94.

Street ratings using the VIKOR Model:
With all the variables in the research, the results of the ranking showed that Enqelab Street had a better position to become the pedestrian axis. In this study, the streets of Eram, 19-Dey, Taleghani and Imam Khomeini are ranked 2nd, 3rd, 4th, and 5th, respectively.

Conclusion
The results of this study showed that the topological order of street patterns was important in space syntax. In addition, integration (Rn), local integration, mean depth, degree of connectivity, street intelligibility, control, spatial and spatial accessibility are among the most important determinants of pedestrianization of urban spaces and pedestrian movement. These parameters were used to prioritize the streets in terms of walkability functionality. Furthermore, the mixed landuse in the streets attracting pedestrians brings the source and destination closer to each other, making the journey more internal.

Keywords: pedestrian movement, VIKOR Model, configuration, space syntax, Qom.

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