

## **Assessment of the implementation of pedestrian-oriented plan in central texture of Dezful City, in the views of residents and shopkeepers**

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### **Extended Abstract**

#### **Introduction**

Nowadays most of the urban public spaces and streets are being heavily dominated by the machines due to the irregular increases in the vehicles numbers and dependency of living pattern on them. This has made a lot of problems in the civil issues, including increase in the ecological pollution, increase in the maintenance costs, and etc. For this reason, walkability plans are now considered as a solution for decrease these problems. Imam Khomeini Street, located in Dezful City, is one of the main streets in which the traffic of riders and pedestrians is very high and this has made several traffic problems in this part of the city. In order to decrease the traffic problems caused by the vehicles, the walkability plan was suggested for this area of this city.

#### **Methodology**

The purpose of this research is to study spatial potentials for implementation of the pedestrian-oriented plan in Imam Khomeini Street, Dezful city. In fact, Imam Khomeini Street of Dezful city, in the old part of the city, is due to increased transportation. A solution to the problems of population congestion, pollution from vehicles and increased safety of pedestrians is implementation of the pedestrian plan in the central texture of Dezful city. This area is considered as the main transportation center in the old texture of this city. So, traffic congestion reduces the efficiency of this sector as well as the destruction of the old texture value. For this reason, implementation of the Imam Khomeini street pedestrian plan can be helpful in maintaining the value of this texture and improving transportation in the area.

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## Results and discussion

This present research has a descriptive-analytical method using documentary and filed works. Scope of project implementation in this area is a distance, approximately 840 meters long. The exact details of the population of this section are not available. In the field method, we have used questionnaires in order to study the satisfaction of the inhabitants and business people of implementation of Imam Khomeini street plan. Thus, the data have been collected from the questionnaires. The statistical population of this study was residents and trades people of Imam Khomeini Street. We have used random sampling regarding the uncertainty of statistical population to distribute questionnaires. The sample size of this study was 96 people that obtained through the Cochran formula. For data processing, we have also used SPSS and AMOS software for analysis of the questionnaire and also ArcGIS software for spatial analysis of the pedestrian plan.

## Conclusion

In order to analyze satisfaction of business people and residents about the implementation of a walking plan with social, economic, physical and environmental dimensions, we have applied single sample T Test in SPSS to compare the desired variables with average value. Since in each factor measured by the likert scale the number 3 is considered as the midpoint, the data in each of the indicators are measured with this number. To identify the variables and factors that affect the acceptance of the residents and trades people from the implementation of the pedestrian plan, the modeling of structural equations and Amos software have been used to find the most important and the most effective variables on pedestrian plan. In fact, we are looking at these issues, which are the views of the business community and the inhabitants in format of social, economic, physical and environmental dimensions about implementation of Imam Khomeini Street Pedestrian Plan. Therefore, with the theoretical foundations of the research in second-order factor model it was based on four hidden economic, social, physical and environmental factors.

According to the results of T-test, the average satisfaction of residents and trades people were over 3 which showed their satisfaction of the pedestrian plan; because these people thought that the implementation of the plan would increase the traffic in this section and the traffic can also increases sales. The group, despite considering that the implementation of the plan would increase the problems of personalized vehicle traffic, but they looked at the positive aspects of the design.

Also, the result of the modeling of structural equations showed that the social factor was the most effective term in accepting the pedestrian plan among residents and trades people; because pedestrian roads have a major social role that can bring liveliness into urban spaces and encourage people to volunteer in the city. Thus, such plans are usually accepted by the public especially shopkeepers, which reflect the satisfaction of people living within the scope of the project.

**Keywords:** pedestrian area, walkability, central texture, Dezful City

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## Identifying and classifying the vulnerability of Kerman primary and secondary emergency roads using a fuzzy Approach

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### Extended Abstract

#### Introduction

Natural disasters are regarded as one of the issues that most cities around the world encounter. Naturally, the first step in dealing with crises and disasters is to rescue people and mitigate aftereffects of that event which requires an immediate reaction in no time.

With development of urbanization, population density, construction of large industrial cities and expansion of metropolises, the impact of urban transportation network performance on the cities, in general, becomes more visible to such an extent that poor transportation network and its poor performance after the earthquake lead to a breakdown of relief measures and reconstruction activities. This can result in adverse social, political and economic consequences. On the other hand, proper performance of each component of transportation network depends on the efficiency of other components. For example, the collapse of a bridge disrupts all its related routes kilometers away or even damage to traffic control equipment such as traffic lights will reduce the efficiency of traffic flow at intersections. Therefore, the damage on each component has a profound impact on the overall efficiency of the network.

The purpose of the present research is to identify Kerman's emergency routes and determine vulnerability rate of them in order to identify and prioritize decisive factors in an assessment of Kerman's disaster management infrastructure. Then, based on available data and analysis of them by GIS and Fuzzy Logic, the primary and secondary emergency routes are identified so that they can be used for disaster management in case of emergency.

#### Methodology

In this research, regarding the views of experts in National Disaster Management Organization, the parameters effective on the assessment of emergency routes of Kerman are population density, open empty space, width of ways, and number of floors. Preliminary data collection of the research was conducted through library method and field survey. To prepare vulnerability maps of roads and determine transportation network of emergency routes, SDM Fuzzy extension was used in ArcGIS. Hence, using this software it is attempted to access and respond to the main objectives of this research.

After identifying all the layers of information and preparation of effective factors in locating the stations, it is necessary to prepare factor maps of each layer. Preparation of map factors is

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consisted of two stages of processing and weighting of information layers. In weighting stage, based on the relative effectiveness in identification and assessment of vulnerability of emergency routes, each factor is weighted by Fuzzy Logic. In every fuzzy factor map, the value of each class and location unit is shown by different levels of fuzzy membership between zero and one. In order to provide fuzzy factor maps in this research, according to the definition of linear membership functions and regarding the positive and negative effects of each parameter and the criteria, ArcGIS have been used.

### Results and Discussion

The factors to identify the vulnerability emergency routes include width of ways, population density, number of floors, and open empty spaces. Thus, each factor was analyzed using Fuzzy Logic and its final map was produced.

Width of ways: based on the studies conducted, a way must be more than fifteen meters in width to be used as an emergency route.

Number of floors: the less the number of building floors in a city is, the less vulnerability rate. As the degree of walled area (low height-to-width ratio buildings approach) increases, the possibility of closing routes will raise. Therefore, debris and rubble can block streets. This can make rescue operations suspended.

Population density: each part of a city that has a high congestion of population is more prone to population density and traffic congestion in case of crisis. Therefore, choosing emergency routes which are not placed in a congested area is a matter of importance.

Open empty space: in choosing the emergency transportation network, level 1 emergency routes and enough space for storage of humanitarian aid are really necessary. The fewer is the congestion of buildings, the more empty spaces available in the city.

Kerman road map of vulnerability based on fuzzy membership is divided into groups 0.9 fuzzy membership, very low vulnerability (green points), 0.7 fuzzy membership, low vulnerability (blue points), 0.5 fuzzy membership, medium vulnerability (purple points), 0.3 fuzzy membership high vulnerability (orange points), 0.1 fuzzy membership, very high vulnerability (red points).

According to the map, Jomhuri Boulevard, Ayatollah Sadoughi, Joupari Ring Road, Ekhtiar-Abad Old Road, 22 Bahman Boulevard, Imam Khomeini Highways, Daneshgah Boulevard, Mahan Road, and Kouhpayeh Road always have a very low vulnerability. Seyyedi Boulevard, Qods Boulevard, Resalat Boulevard, and Mehr Street have a low vulnerability. Shohada Avenue, Hejab Boulevard, the end of Jahad Avenue, Hamzeh Boulevard, Shiraz Boulevard, Shahid Mostafa Khomeini Avenue, Mehr Avenue, and Bastani Parizi Street have a medium vulnerability. Sarbaz Avenue, Jahad Boulevard, Shahid Beheshti Avenue, and Imam Jom'e Street have a high vulnerability, and Imam Hossein Boulevard, part of Jahad Avenue, and 24 Azar Avenue have a very high vulnerability.

### Conclusion

The results reveal that among the four factors mentioned above, the width of ways has the highest weight and open empty space has the lowest weight. Moreover, in order of preference, each factor has been studied as the most important factors affecting identification and assessment of emergency routes. According to the prepared vulnerability map, the level 1 emergency ways includes ring roads that have appropriate width and a lot of empty spaces and low population density in the vicinity which are the best ways to connect fast-network suburban transportation. Jomhuri Boulevard and Ayatollah Sadoughi which also have proper width and low distance from the airport, railway and exit of Kerman to Shiraz, Tehran, and most of other major cities are considered as level 1 emergency routes. Other main streets are also given the vulnerability and possibility of connecting with outreach centers (Red Crescent, hospitals, fire stations, and security centers have been chosen as level 2 emergencies).

**Keywords:** vulnerability, primary and secondary emergency routes, Kerman, fuzzy.

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## Spatio-temporal analysis of sprawl in coastal areas of Caspian Sea

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### Expanded Abstract

#### Introduction

There are long coastlines on the northern and southern regions of Iran. The length of the coastline in the northern strip is 890 km and in the south it is about 4900 km. Among the Iranian coastal areas, coastal zone of the Caspian Sea due to the boom in tourism activities, agriculture, fisheries, port activities, favorable conditions for natural resources such as forest and fertile soil, good rainfall and access to surface water is one of the most densely populated areas of Iran. In contrast, the Caspian Sea level fluctuations, improper utilization of resources, erosion, high seismicity, lack of proper wastewater treatment systems for domestic, industrial and agricultural activities, lack of suitable land for waste disposal due to high groundwater level, and privacy in coast faced this region with serious challenges. Of all the challenges, rapid changes in land use and land cover due to urban sprawl, faced coastal zone of the Caspian Sea with complex spatial crisis. The first step to overcome the current situation, identify the trends in land use and land cover in the coastal zone of the Caspian Sea. We are to provide the basis for understanding the past and present spatial changes and the possibility of adopting necessary measures to improve the future status of the region. The aim of this study is to analyze the spatio-temporal changes in population and land cover in the coastal zone of the Caspian Sea. The urban sprawl as a major factor in the formation of spatial crisis has been quantized and spatio-temporal characteristics of sprawl have also been detected.

#### Methodology

In order to analyze demographic trends in the Caspian Sea coastal region, we have used the results of the General Population and Housing Census of Iran. To represent a clear picture of demographic trends in the region in 55 years, the absolute changes in population, the annual growth rate of population, urban primacy index, rank-size rule and some spatial statistical techniques such as elliptic standard deviation were used. To study the spatio-temporal changes in land cover, we have also used satellite imagery in the coastal strip of the Caspian Sea. After pre-processing of data, using object-oriented classification and eCognition software, land cover maps

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in the periods 1985, 2000 and 2015 were prepared. Maps we have produced are consisted of four classes of land covers including built-up land, water bodies, vegetation and bare land. Google Earth software has also been used to verify the classification results.

### Results and discussion

One of the most important factors driving spatio-temporal changes in land cover is population and relevant changes. Caspian Sea coastal population in the period from 1956 to 2011 has experienced significant changes. The annual growth rate of 23.2% with the approximately 15.2 million in 1956 has increased to more than 33.7 million people in 2011. With the increasing population in the coastal strip of the Caspian Sea, the region with the relative density of over 126 inhabitants per square kilometer has become one of the densest regions of Iran. In addition, over time, the distribution of population in the coastal zone of the Caspian Sea has been more diffused. Urban primacy index was significantly reduced at 55 years and the results of elliptical space-based standard deviation confirm the concentration of population in the wider zone compared with 1956. Following demographic trends and the increasing population in the coastal areas of the Caspian Sea, obvious changes have occurred in land cover and land use. Most of the changes belong to the land of cities and villages that has increased with annual growth rates of 2.3% from 1158 hectares in 1985 to more than 3162 hectares in 2015. An increase of about 2 thousand hectares of built up land have been occurred mainly by changes in vegetation covers from agricultural land, forests and pastures to urban lands. The main point in Spatio-Temporal urban land changes in the coastal strip of the Caspian Sea is pattern changes. The results of the analysis of growth patterns in urban lands using sprawl index showed that the growth pattern of urban land in the study area has been urban sprawl or dispersed growth. In this situation, sprawl index, or the ratio between the growth rates of urban land to the population growth rate in the period 1985 to 2015 in the coastal strip of the Caspian Sea is 4.7. This indicates the existence and dominance the sprawl phenomenon in the study area.

### Conclusion

In general, the increasing population, followed by spatio-temporal changes in land cover in the coastal strip of the Caspian Sea, can lead to urban land expansion and sprawl and unplanned growth, the coastal zone the area is faced with the spatial crisis. As the situation is continued in the region, the coastal region will be faced with a spatial crisis and fragmentation of landscape.

**Keywords:** Land cover, Sprawl, Spatial Metrics, Coastal Regions, Caspian Sea

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## The study of renewal policy on urban worn-out areas (Case study: Karaj)

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### Extended Abstract

#### Introduction

Nowadays with increasing growth of urbanization, urban problems are entangled in the cities more than any other time. These difficulties have affected all aspects of urbanization and decrease in total quality of urbanization. Old urban textures are one of the urban difficulties with three main indices, 1) Granulites 2) Impermeable 3) Instability. Renewal and improvement of these old textures are considered by many programmers and urban managers in recent decades. Inconsistent and often contradicting policies are one the obligations of regeneration and refinement of urban distressed areas. In recent decades, various policies on environment quality ascension, social status, and cities vitality, especially their inner areas, have been proposed. Many projects have also been conducted about these issues. Comprehensive policy making and planning with regard to refinement and regeneration of the urban old textures are purposeful and deliberate attempts to achieve a consistent and integrated urban management. The purpose of this study is to investigate the refinement policies of Karaj town, prioritizing these policies and identification of their most significant policies. These are effective and impressive on regeneration and refinement of the old texture of Karaj town.

Karaj, like a young metropolis which less than 50 years have passed from its new life (as a complementary core in the urban complex of Tehran), is faced with an issue of old urban texture in 785 hectare of urban region. Therefore, immunization of problematic textures of this town is inevitable in various issues of social, environmental and physical aspects.

#### Methodology

This study is a descriptive-explanatory research. The purpose of this study is to investigate the current condition, systematically describe this current condition, and investigate the relations among different variables. This research is conducted in a way that its results can be utilized in decision makings, policies and planning. The research method used here is a secondary-field study (observation, questionnaire) technique, considering the subject, objectives and research questions. The data of this research have been collected through two questionnaires and they have also been analyzed and concluded using Micmac (policies prioritizing) and Superdecisions

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(detection of effective and impressive policies) software. We have applied the Micmac software for structural analysis and Superdecisions software for statistical analysis. Through Superdecisions, best options can be detected and patterns can be created in complex environments. It has also the capability of solving the multiple factors decision making problem. The Micmac software provides this capability by receiving help from the matrix connection, all main factors of a system can be explained. Through investigation of this connection, the related method of the detection of main variables is provided to assess the system. For distribution of questionnaires, the snow ball sampling technique has been used as a certified survey method. Different sources for this research are books, thesis, articles, master plans, detailed plans of Karaj city from 2010 till now, websites and etc.

### **Results and discussion**

Research results indicate that from 11 selected policies in this part and considering the 4 measures of cost, operation duration, operation capability, and the amount of effectiveness, the ANP model have been designed using Superdecisions software. Then, by forming matrixes, pairwise comparison has been made among clusters and measures. After finishing the pairwise comparison, the Inconsistency Rate (IR) has been calculated as 0.1, which is acceptable. Final results of priorities superiority in 11 classes in nominal and graphical form indicate that some parameters including “policy of execution of development stimulation projects, supporting and infrastructural projects in old texture areas” and “utilization of the financial and intellectual power of people” and “providing suitable conditions for establishing an integrated management in the old texture” are of the most important parameters.

In the final part of the research, effective factors of refinement have been adjusted in 9 major indices. After that, in form of cross impact matrix and by the contribution of experts, the significance degree of each factor and their amount of impact on each other were determined. Then, through data analysis by software, the position of each of these factors has been recognized in the effectiveness-impressive plot. Given the distribution and the diversity of factors, the system is unstable. In unstable systems, two classes of adjustment factor and two-dimensional variables are also added to the set.

Finally, the most important factors influencing the refinement policies of Karaj town have been identified. These factors are “processes and buildings refinement operations simplification in distressed areas” and “supporting the establishment of districts refinement services administrations”. Refinement services administrations are established with the purpose of development and encouragement of life quality elevation, regeneration of the texture and the reinstatement of vitality, dynamism and cooperation, and strengthening of social liability. Moreover, these administrations attempt to create a connection with the people and their representatives, so that their optimized capabilities are utilized, and they promote the people level of knowledge about the existence of facilities and privileges through informing and instructing them. It can be said that the services and activities of such administrations are an important solution in simplification of districts processes and levels of refinement.

### **Conclusion**

The urban planning system in the old texture areas needs a management that can utilize the necessary tools and resources for conduction of its plans and projects in relation of refinement and regeneration. This is to achieve the intended objectives and goals. Urban management needs to govern the matters that exist in the urban executive organization to conduct its plans and to achieve urban development. These responsibilities include planning, organizing, and coordination, controlling and monitoring, and leading. In order to define urban management and perceive its concepts, we need to accept that there ought to be a system or an organization to manage. Thus, the plans executive system and urban development plans comes to mind. Urban planning organization and executive system is not centered in a single organization because of the reliance of cities managements to the Ministry of Interior.

Integrated urban management means that decision making and conduction of responsibilities is submitted to municipalities. All the responsibilities and budgets are allocated to these bodies. Creating a suitable bed for integrated management in distressed areas is significant because many bodies are responsible for the affairs of distressed areas and each function in its own way. They are not coordinated through a single point (municipality). Therefore, integrated management in distressed areas will lead to more favorable results.

**Keywords:** old texture, renewal policies, prioritization, influential and dependent factors, Karaj.

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## Land use Compatibility Assessment of Birjand City Based on Analytic Hierarchy Process (AHP)

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### Extended Abstract

#### Introduction

In the wake of the rapid urban spatial evolution, urban land use planning is based on two principles of sustainable development and promotion of quality of life. This seeks to achieve some goals such as balanced distribution of uses, prevention of conflicts in incompatible uses, and formulation of land use standards. The city of Birjand, the capital of the southern Khorasan province, has administrative, service, educational and economic role respectively in a regional, provincial and trans-regional scale. Given the urban land use analysis in Birjand, it is of great importance to improve the quality of service to the residents of the city and the influence and achievement of the economic and social goals. The main purpose of this research is to assess the compatibility of land uses in Birjand City. In this research, the compatibility and incompatibility of Birjand city utilization are investigated through the application of modern knowledge of GIS and computational models such as hierarchical analysis.

Process evaluation and hierarchical analysis model are among the multi-criteria evaluation methods. Using this model, the internal and basic weights of the data are measured and then the relevant ranking is extracted. The given weight is involved in the assessment as a number. This indicates the relative importance of that criterion over other criteria. Typically, the weights are normalized to a total of one. It should be ensured that the weight is consistent before adjusting, and that the incompatibility rate is calculated, and if this value is less than 0.1, then compatibility is acceptable. Geographic information system and the model presented in various analytical fields such as urban, rural, demographic, service, agriculture, climate, etc., can be used to make better decision making.

#### Methodology

This is a descriptive-analytical research, and in terms of the purpose, it is an applied research. This study combines documentary-field data. Due to the combined approach of GIS capabilities with available models for urban issues, the analysis is carried out using the GIS system and AHP. In the end, a map will be created in which the compatibility and incompatibility of the Birjand city are obtained in different parts.

#### Results and discussion

In this research, the layers have initially been collected including the existing status of Birjand city from existing organizations and centers. The total area of the existing land use in Birjand is 2573 hectares. Then, for each layer after digitizing and transforming into shape format in the

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ArcGIS software environment, according to land use compatibility table, valuation maps and weighing have been done in multidimensional space using a hierarchy analysis model. After the data collection, digitization and shape format conversion of each land use is evaluated according to compatibility matrix for other uses: 1- Compatible (value 9), 2- Relatively compatible (value 7), 3-indifferent (value 5), 4- relatively incompatible (value 3) and 5-incompatible (value 1). Finally, the evaluated maps of each use are obtained based on the degree of compatibility. In this study, to combine layers with each other, the extension of AHP is used in the ArcGIS environment. The results are shown (map 12), and finally, by categorizing the AHP output map, a map is obtained to show compatible and incompatible areas of Birjand (Map No. 13). According to this map, majority of Birjand urban land uses are compatible and relatively compatible, and limited areas of that are incompatible and completely incompatible.

### Conclusion

In this study, planning of Birjand urban land use has been investigated with the aim of assessment of the quality and compatibility of various urban land uses in order to ensure the logical deployment of the landuses and necessary proportions. In the method, for separation of incompatible uses we have employed the new data in GIS and computational models such as Analytical Hierarchy Process. Finally, a map has been created that to show different landuses in the degree of compatibility and incompatibility in Birjand City. According to this map, most uses in the city of Birjand are compatible and completely compatible, and the limited areas show the location of industrial and municipal facilities. In the final map residential and service-tourism facilities are incompatible and complete incompatible. Most of the areas include the workshops, industrial uses and urban facilities along with residential and tourist uses.

Some suggestions for the area are use of open space such as barren lands, attracting partnerships and cooperation of citizens, locating the proper facilities of the city, finding the correct location of industrial workshops according to compatibility is the basis of urban development management in order to comply with the principles of sustainable urban development.

**Keywords:** urban sustainable development, urban facilities, Land use Compatibility Assessment, Birjand City

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## Organization of space and spreading of informal settlement in Tabriz metropolitan

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### Expanded Abstract

#### Introduction

Urban spatial structure and organization is originated from natural, social, cultural, political and economic forces. From past to now, these forces as important factor have played main role in city arrangements. Informal settlements organization and creation are also originated from current forces in city spatial arrangement. Industrial revolution with mass production and centralized form and urban communication facilitated development around environments. This resulted in creation of organization and new spatial structure based on quantitative form (city spatial development) and qualitative form (origination residence certain form). Urban population increase, industries development and population activity and also urban fast changes framework can change the past equations of urban spatial organization and make the cities faced with many problems in environmental, social and framework arenas with some uncertain problems. One of the most important problems in urbanization development is related to creation of informal settlements in contemporary cities heart. Creation and development of organization in the settlements were initiated during some stages and various factors influenced immigration. In current research we want to conduct a spatial organization survey in Tabriz metropolitan settlements with the effective factors on the creation and development of the phenomenon. Informal residents in Tabriz metropolitan area is as an important urban problems as black spot in Tabriz framework since 1961. This residence pattern is increasing rapidly in Tabriz city.

#### Methodology

Current research method is applied-theoretical according to study type and it is analysis – descriptive according to nature. For data analysis, we have used document –field (measurement) method. Development Tabriz metropolitan informal settlements have initially been investigated using documentary form and reference to the related statistics. For measurement of the effective factors in informal settlements organization and development, questionnaires have been distributed among the managers, administrators and urban experts. We have selected 110 persons as sample volume by using simple randomized sampling (Statistical population is 1400 persons), for data analysis, regression coefficient and numerical average tests and Friedman's

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ranking average in SPSS and also plans preparation in GIS. For inside validity measurement in current research, at first context validity has been used to increase the questionnaire reliability.

### Results and discussion

Background of informal settlements in Tabriz refers to 50 years and it is increasing to now. Tabriz role as a major place in history of Iran and the necessity to allowance in entering to this city lead to some effects on rapid development of informal settlements. Tabriz informal settlements not only didn't have something to do with the industrial development, but also it returned to industrial era. Contemporary informal resident phenomenon in Tabriz city since 1961 improved at the beginning of agrarian reforms in Iran. Creation and installation of large industrial units and vacancy of rural centers increased rapid expansion of informal residence. Generally, organizing informal settlements in Tabriz city is divided into 3 periods. Before 1960s because of Tabriz political position and increasing immigration of rural population to the city and inexpensive lands in urban outskirts and immigrant residence in improper lands, the informal settlements were developed in the suburb areas. Tabriz metropolitan informal settlements received the spatial organization and arrangement before agrarian reforms based on natural, political and social factors. After 1960s, the agrarian reforms, rural industrialization and fast immigration to Tabriz City, and also increase in oil price led to development of informal settlements in outskirts areas. After 1983, development and organizing of these informal settlements in Tabriz metropolitan and around villages declined due to partial accessibility to valid formal systems and house loan for low-income persons in informal parts in South and Southwest regions.

### Conclusion

Based on Tabriz metropolitan political position and increase in immigration, informal settlement developed again before agrarian reforms. Immigration increase and Tabriz metropolitan population growth especially since 1966 resulted in financial inability of the residents to have a home in formal outskirts and urban legal areas. They provided informal lands for living in urban outskirts places. Main reasons for development of informal settlement and residence in Tabriz metropolitan is related to some factors including unbalancing in urban system and surrounding villages, unfair distribution of power resources, wealth and income in the city, lack of anticipation sufficient residential space and proper case for people with low income in urban framework plans and standards out of their ability, low accessibility for valid and informal systems and house loan for low income persons and weakness in urban management and people participation in planning and preparing patterns. Development of the settlements in Tabriz metropolitan shows that informal ranges in north part of the city have long-term experience against other ranges. South and Northwest ranges were created and developed after 1971 to recent years. Southwest ranges are related to urban development in recent years and are combined with the surrounding villages in Tabriz metropolitan.

**Keywords:** Urban space structure, Organization of space, Informal settlement, Tabriz.

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## **Assessment of Residential Environment Quality of Urban Neighborhoods (Case Study: Neighborhoods of Khorramshahr and Ziabari, Rasht)**

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### **Expanded Abstract**

#### **Introduction**

From the very beginning of society development and the basic biological complexes, human have tried to take control of their environment in response to one of their most basic innate needs. In this regard, since the purpose of planning is to improve the environment in terms of security, health, beauty, convenience and general welfare, quality of the environment has been considered as one of the key issues in the topics of planning and design. In relation to this concept, the importance of urban residential environments as the main residence of people is increasing day by day, so that in the first place these environments provide important tools for the development of different life indicators such as health, family, work or leisure. Second, lots of people are living or will live in the near future in highly urbanized areas and special attention should be given to the quality of their home environments. Obviously, the identification of the factors affecting satisfaction and dissatisfaction of housing residents can contribute to the analysis of residential status quo, future decisions to enhance the quality of the residence and preventing shortfalls in other places. Thus, the aim of this study is to analyze the quality of the residential environment in two neighborhoods of Ziabari and Khorramshahr Boulevard in the city of Rasht, as well as to identify and review the indices that have the greatest impact on residential satisfaction of residents according to them. In fact, this study has attempted to investigate the residents' reactions to their home environment in these areas, analyze performance of these neighborhoods in order to create a better environment for living through the objective and subjective dimensions and also determine the residents' satisfaction with the quality of their home environment.

#### **Methodology**

This research is a descriptive-analytic study. To obtain the relationship between variables with the use of five quality indicators of quality of access, social characteristics of the environment, physical characteristics of the environment, quality of housing unit and communal services, a

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questionnaire was used. The reliability of the instrument (0.983) was measured by Cronbach's alpha and data were analyzed using SPSS software and statistical methods such as multivariate hierarchical regression analysis (HMR), One-sample T-test and Spearman correlation analysis.

### Results and discussion

In the neighborhood of Khorramshahr Boulevard, 51.3% of statistical populations are men and 48.7% are women. In the neighborhood of Ziabari, 55.5% are men and 44.5% are women. In terms of age, in Khorramshahr Boulevard, 14.5% of the respondents were 15-24 years old, 21.1% were 25-34, 15.8% were 35-44, 19.7% were 45-54, 5/10% of 55-64 and 18.4% were over 65. In Ziabari, 15.8% of all the respondents were 15-24 years old, 13.7% were 25-34, 15.1% were 35-44, 8.17 % were 45-54, 21.2% were 55-64 years old and 16.4% were over 65. In terms of education, in Khorramshahr Boulevard 14.5% were illiterate, 14.5% had a primary-middle school degree, 35.5% had diploma, 11.8% had advanced diploma, 21.2% had bachelor's degree and 2.6% had master's degree. In Ziabari, 2.1% were illiterate, 10.3% had a primary-middle school degree, 37.7% had diploma, 22.6% had advanced diploma, 23.3% had bachelor's degree and 4.1% had master's degree.

In the neighborhood of Khorramshahr Boulevard, social indicators of environment (2.083) and quality of residential units (3.443) are at a desirable level and indicators of access (-9.949), physical characteristics of the environment (7.706) and public utilities (-5.514) are undesirable. In the neighborhood of Ziabari, the indicators of access (3.298), social characteristics of the environment (11.233), quality of residential units (11.051) and public utilities (3.781) are above the average level of quality and only the indicator of physical characteristics of the environment (1.222) is at the average level of quality. Results also showed that in Khorramshahr Boulevard, physical characteristics of the environment (0.52), social characteristics of the environment (0.308), public utilities (0.184), quality of residential units (0.078) and access (0.067) and in Ziabari, social characteristics of the environment (0.459), physical characteristics of the environment (0.273), access (0.233), quality of residential units (0.061) and public utilities (0.003) were respectively important according to the residents. Also according to the results, it became apparent that the satisfaction of housing units had moderate positive correlation with satisfaction of residential environment in Khorramshahr Boulevard (0.484) and there was also a relatively strong positive correlation in Ziabari neighborhood (0.599). This means that by increasing the satisfaction of residential units, satisfaction with residential environment increases as well.

### Conclusion

Given the results, in Ziabari neighborhood, even though the characteristics of the social environment were in good condition according to the residents, but this factor is the most important one from the perspective of residents. This reflects the importance of the social characteristics of environment among residents. For the physical indicator of the environment in this neighborhood, residents' evaluation of its quality has been consistent with the prioritization of these indicators, so that this indicator has the lowest desirability among the residents. Therefore, it is in second place in terms of importance according to the residents. Other characteristics including access, quality of housing units and public utilities that were evaluated favorably by the residents have the next rank in importance according to them. In the neighborhood of Khorramshahr Boulevard, residents' evaluation of social characteristics of the environment is relatively similar to Ziabari neighborhood and choosing the physical indicator of environment as the most important factor in the evaluation of residents reflects that this indicator is unsatisfactory. Therefore, given the poor state of physical indicators of the environment, access and public utilities, urban policy should meet the needs of the citizens in these neighborhoods. On the other hand, the results showed a positive and medium intensity relationship in neighborhood of Khorramshahr and relatively strong and positive relationship in neighborhood of Ziabari between housing satisfaction and residential environmental

satisfaction. That means, Characteristics of housing units in these two neighborhoods could have a direct and significant role in decreasing or increasing of residential satisfaction.

**Keywords:** Residential environment, Residential satisfaction, Rasht, Khorramshahr Boulevard, Ziabari

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## Geomorphological Assessment of Land Suitability for the Physical Expansion of Sanandaj City Applying Restricted Areas

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### Expanded Abstract

#### Introduction

The Third World cities, in recent years, are faced with numerous problems, including population growth, uncontrolled migration and consequently increasing disproportionate construction with environmental capabilities. This heterogeneous development has multiplied the vulnerability of cities to the risks involved. The fact is that the structure of the spatial and physical development of cities is very complicated. This problem prevents many attempts to analyze and communicate useful and effective policies and approved plans of the city. Therefore, understanding the natural structure of the area, on the one hand, could have the breadth of vision and knowledge of the environment and, on the other hand, provides a measured and considered the possibility of any movement in the environment by humans in the form of a regular system. Establishment and creation of a city, more than anything else, depends on the conditions of its geographic location, because the natural phenomena have a decisive effect in location, sphere of influence, urban physical and morphological development. Natural phenomena act as sometimes positive and sometimes negative factors and inhibitors. Therefore, any development in natural areas should be done with appropriate programs and management plans and zoning so that, along with the people use of the region, it is possible to preserve its natural values and, thereby achieve continuous operation of the area. To achieve this objective, urban land-use planning is considered as one of the main aspects of building the city. Due to the turmoil, the problems of the cities have been considered. In this connection, environmental and especially geomorphological features, in the direction of optimal management of this process are very significant and have important role and should be considered and evaluated as a necessity in connection with the selection and development of environments settlements and especially urban areas.

#### Methodology

In this study, to investigate and zoning favorable areas for urban development, 8 different factors of slope, aspect, elevation, geology, land use, distance to fault, distance from the river and distance from urban areas have been used as factors of this research. In order to analyze the data and locating suitable areas for respective objectives, restricted areas method and fuzzy

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logic with AHP models have been used. The restricted areas method is for site selection of the settlements appropriate for all criteria. For this purpose, restricted areas have been identified that are fit for the purposes of urban development. Then, for the areas that are off-limits, zoning action is taken by using a combination of fuzzy logic and AHP. In the present study, in order to prioritize the criteria and determine the weights of each of them, the AHP model is used. For this purpose, the opinions of relevant experts are used. Moreover, the final weight of each criterion is obtained after comparing test criteria. In order to increase the accuracy of the study and comparison, fuzzy logic model associated with linear membership function is used to layers.

### Results and discussion

For site selection of suitable areas for urban development in the study area, eight parameters were used. After gaining weight factors and identifying restricted area, the layers of fuzzy data were collected and have become comparable. Then, according to the final weight of the criteria and the restricted areas, data layers are combined and integrated in GIS. Gamma fuzzy operator is used to adjust the sensitivity of the very high multiplication sensitivity and very low phase addition operator fuzzy. The results obtained from integrating layers as well as restricted areas (Figure 12) indicates that a large portion of the study area is restricted areas and unsuitable for its respective purpose. Unlike marginal and peripheral areas, central areas of the study area have fair potential for urban development goals. In fact, many of these areas are off-restricted areas.

### Conclusion

In this study, different aspects of urban development in Sanandaj city were examined in different directions and using natural parameters. Finally, the total area of 208 square km under study were evaluated and placed in three categories of relatively good, good and very good. Mountainous areas, high-altitude regions and consequently high slope regions with crossing streams and multiple faults, and restricted areas for urban development have the greatest area (36%) of the map. Relatively good areas for development are in second place, 25.1%, and located mostly in southern and eastern parts of the map. The 23.7% of the total area under consideration is allocated to the good fields in the northern parts of urban development. Moreover, 15.2% of map area is allocated to very good lands for urban development. This covers much of the center of the map and the current location of Sanandaj City. Finally, the results of this research are in a borderline management state for the present situation and provide management horizon for urban development patterns in the future.

**Keywords:** urban physical expansion, geomorphological urban restrictions, restricted areas, Sanandaj

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## Assessment of Walkability in Urban networks based on Space syntax (Case Study: 9th District municipality of Mashhad)

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### Expanded Abstract

#### Introduction

Walkability is the capacity and suitability for walking, and in another word “the utility level of the urban built environment for presence, living, shopping, meeting, and passing the free times of the citizens in an urban area”. Following the growing urbanization, developing multiple and broad consequences of economic, social and environmental aspects and using motor vehicles, recent approaches in urban planning is concentrated on restoring capability of walkability in cities to identify and create optimal routes for walking. In this regard, the Space Syntax technique is a new approach in anticipating the traffic of the pedestrian and driver passer that shows the results by mathematical and physical parameters. This is in addition to analyzing the connection of all urban areas with each other. These parameters can anticipate the operations and behavior of the citizens in urban areas. This method can anticipate the pedestrian crossing with radius integration. Experience has proven that the integration of a node is related to the use of that node so easily that the criterion is known as “potential move”. Thus, the higher the integration of a street, the higher is its potential for pedestrian and more desirable space for users. Besides the concept of potential move, another concept called "natural move" expressed the relation between urban structure and located style of urban areas next to each other with pedestrian traffic density. To calculate intermediate integration, we can use intermediate radius. The radius in intermediate integration is the average depth of most integrated line at the macro-level integration. Therefore, the radius for different cities with different structures will change. For the city of Mashhad radius of 8, i.e., calculation of integration with eight direction change or eight connections is considered. Based on this approach, the aim of this research is to assess the walkability of the urban crossings of the 9<sup>th</sup> District municipality of Mashhad based on the 5 indices of walkability, environment safety, and facilities of the sidewalks, physical conditions, environment accessibility and utility. This study is to analyze its natural movement pattern by Space Syntax, by using the concept of Integration Value.

#### Methodology

The purpose of the research is application development and the research framework is analytical descriptive and conducted by survey method in 9<sup>th</sup> District of Mashhad municipality and its territories. The data have been collected by the library research and field works. Field methods

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are conducted as interview with authorities of 9<sup>th</sup> District municipality and Observation Method for Evaluation of the walkability in the passages of 9<sup>th</sup> District municipality. In different regulations, various criteria are provided to identify the passages which have the potential to become pedestrian crossings. However, depending on the possibility of various parameters estimation, some criteria can be added or removed. The criteria used in this article are considered by examining the diverse range of previous studies and the combination of environments qualitative criteria. In connection with walkability according to the specific circumstances of Mashhad city, we have used the recommendations of the Walking Facility Regulations. According to the preparatory zoning of development plans in Mashhad metropolis, 9<sup>th</sup> district of this city has become one of the entertainment and tourism poles for adjacent and pilgrims of Imam Reza (AS). This area have High functionality for design and planning of walking routes because of high population density, short distance trips within the region, located on smoothly slopes, age structure and young population. In recent years, high traffic in peak hours of urban journeys, overcrowding and congestion in service and trade centers convert the opportunity to an important challenge and degrade the quality of the environment, especially for pedestrians. Therefore, measuring the urban crossings walkability of this area is important and prediction of optimized routes for pedestrian and motorized traffic under the influence of physical intervention by using Space Syntax technique is the main purpose of this research.

### Results and discussion

In the field of walkability, because of counterexamples, it is necessary to apply this method with cautious. In addition to the Space Syntax method to ensure the results of this research, Walkability indicators are also used to eliminate weaknesses of Space Syntax. This research obtained some results according to the scoring table of the walkability indices of the urban crossings of 9<sup>th</sup> District municipality. These results indicate that Kalantari highway, Malek Abad Blvd, Vakil Abad Blvd, Hashemieh Blvd, Kowsar Blvd and Piroozi Blvd (22-25 scores) are in the first priority, Sayyad Shirazi Blvd, Honarestan Blvd, Delavaran Blvd, Saremi Blvd, Fakoori Blvd and Haft Tir Blvd (18-21 scores) in the second priority, Ladan Blvd, Eghbal Lahoori Blvd, Hafez Blvd, Bahonar Blvd, Sarafrazan Blvd and Khaghani Blvd ( 14-17 scores) in the third priority and the routes like Namaz and Boronsi Blvd ( 10-13 scores) in the last priority of walkability. Also the results of this research in analysis of the mobility channels by Space Syntax method showed that tendency for walking in paths with high average integration value have more potential for walking and walkability. Therefore, Saremi Blvd, Hashemieh Blvd, Honarestan Blvd, Vakil Abad Blvd and Haft Tir Blvd with high average integration value (> 0/900) has the highest potential for walking and Eghbal Lahoori Blvd, Ladan Blvd, Sayyad Shirazi Blvd, Hafez Blvd, Bahonar Blvd, Namaz Blvd, Fakoori Blvd and Piroozi Blvd with low average integration value (< 0/700) are the last priority in terms of Syntax Space.

### Conclusion

By studying both the Spatial Syntax and Walkability Indicators, according to focus of citizens' activities, site selection of important regional elements and attractive applications of backpacking trips, Traffic priority of backpacking trips will be on Vakil Abad Blvd and Hashemieh Blvd. Then, Saremi Blvd, Honarestan Blvd and Haft Tir Blvd, due to high demand of backpacking trips and weak system of pedestrian crossing facilities, are in the second priority of walkability; Kalantari highway, Malek Abad Blvd and Kowsar Blvd, due to low demand of backpacking trips and good system of pedestrian crossing facilities, are in the third priority; and at the end, Khaghani Blvd, Sarafrazav Blvd, Delavaran Blvd, due to low demand of backpacking trips and weak system of pedestrian crossing facilities, are in the last priority of walkability in 9<sup>th</sup> District municipality.

**Keywords:** Walkability, Space Syntax, Integration Value, 9<sup>th</sup> District municipality.

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