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Physical-Spatial Analysis and its role in the Social Abnormalities (12th Municipality Region of Tehran City)

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Abstract

Nowadays, development of urbanism and increase in the social abnormal behaviors such as crimes leads to decrease citizens' safety considerably. It is considered as one of the most important criteria in spatial quality. This is why that nowadays the subject of crime is studied by researchers and authors more than pasts. The present study was aimed to investigate the physical-spatial analysis and its role in the social abnormalities in the 12th municipality region of Tehran. This study is a descriptive-analytical research. In order to recognize spatial patterns of crime distribution in the city of Tehran, several statistical methods have been used. These include clustering, the nearest neighbor index, index of spatial autocorrelation, and Moran index. In order to recognize crime areas in the 12th municipality region, statistical graphic methods such as Kernel Density Estimation have been used. The statistical population of this study includes offenses in a year in the 12th municipality region in the city of Tehran. The results of this study revealed that 12th municipality region has a cluster and concentration style and offense is concentrated in an especial area of this region and other regions have health and clean climate.

Keywords: Physical-Spatial Analysis, Social Abnormalities, 12th Municipality Region, Tehran City.

Introduction

Increase in the social offenses and social abnormality is considered as one of the serious problems and difficulties across the world so much that social crimes create unsafely senses, serious and physical and financial mental difficulties for citizens. More importantly, crime occurrence, prosecution and punishment of convicts and prevention of abnormalities require comprehensive justice and law enforcement efforts, and serious financial costs for both governments and societies. Generally, all of the social abnormalities and corruptions (crimes) have their own especial place and time characteristics. This is why that the occurrence of crime has been increased during last years than past times.

Occurrence of different crimes and social abnormalities is considered one of the most important and complex issues across the city of Tehran. It seems that personal, social, economic, and cultural factors and also some other defections and physical-spatial abnormalities leads more crimes in this area. This is why that the 12th municipality region of the city has been selected as research area of this study.

Literature Review

Study relation between place and criminals with new method is a scientific in the first half of 19th century; it begins with import theory social ecology. Quetele and Guerry were harbingers of this thought, then this idea followed by other thinkers pursuant school of social ecology Chicago like "shaw" and "Mckey" in the first 20th century. But before decades especially 1960 decade, the attention and increasing interest formed toward study environment role in crime and counterpoint the effect environmental situation in prevention crime (Kalantari, 2001:56). "Jacobs"(1961), one of the pioneer of this idea, his book "life and death America big cities" pay to this issue that there is a near relation between crime and skeletal environment that can be control and evaluate. He has realized modern cities that has been formed base of zoning pattern and worked detachment and suggests motley control and suit plaudit crowded and lively streets, security, public peace by beneficiaries' supervision of space and believes that boost social relations. One of the procedures for creating supervision to spaces, set windows and balconies in front of streets and public spaces that more eyes is supervisor toward activities, hereby it decrease probability of occurrence crime opportunities (Rezazadeh and Khabir, 2010: 59). As well as this issue, two last decades it has happened important changes in theory and preventive policies of criminals opposite to urban criminals. Within this theory for prevention of crime, it must be emphasize occurrence place of crime as well as criminal, so by omitting crime opportunities in geographical environment, provide minimization of crime rate (Kalantari et al, 2010: 42). Study crime and crime places was presented by "Brantingham" and "Brantingham" in 1993, for discovery mutual action between criminals and social and skeletal environment as their crimes aim (Kalantari, 2001:89). Their theory is that crime is the result of mutual action between people and movement in urban view at space and time (Criminals, victims). Also it must have four elements for crime occurrence at a place: 1) law, 2) criminals, 3) purpose, 4) place (Chung, 2005: 10). In this background "Brantingham" believes that, criminology is a tradition for recognition criminals and their stimulus in crime. So, it can study crime without consider individual or personal stimulus and set crime and place situation its commitment instead of criminals and his stimulus (Brantingham & Brantingham, 1990: 17- 49)

The term "crime focus" was used the first time by "Sherman" "Gartin" "Berger" in 1969 and analysis criminal site. This term is stands for site or geographical confine that criminal scale is high. The range of this place can be sectorial of a city, a quarter, and several neighbor streets

and even may be a house or residential place. A lot of people at definition "crime focuses" have known equivalent small sites with high predictable crime at least in a yearlong period (Kalantari et al, 2009: 80).

According to "Clarke" "crime focuses" is a confine rather than other confines, people contact to police for appealing help. According to this idea crime focuses can increase local crimes (Felson and Clarke, 2008:15). The most important crime spots are a site that includes much crime. This site can be in address form, street corner, shop, house or small site and situation (Sherman et al, 1989:27-55). A lot of thinkers like theory advocate of routine activity have known the reason for distributing criminal centralization at geographical specific confines at convergence and compound three bellow factors that cause formation crime focus.

A. Existence of crime targets.

B. Existence of criminals that include stimulus, power enough skills doing crime action.

C. Doesn't have look out and suitable control to opposition crime actions through people and supervisors (Felson and Clarke, 2008: 11). A lot of researchers know that some controls are effective at formation of urban crime focuses. "Sherman", "Gartin" and "Berger" have eluded the relation between control and formation of focuses. (Sherman, 1989: 27: 55)

"Vizberd" and "Eck" know that four below basic concepts are effective at formation of crime focuses:

A. Existence of possibilities and criminal suitable facilities.

B. Site features like, easy access, without guardian, without correct management to place and its alongside existence of some possibilities that cause criminals in persuasion of crime at some specific places.

C. Crime targets or existence of properties or things that are favorite for criminals.

D. Offender or existence of more offenders and having ability, enough stimulus for crime action is other effective factors at formation of crime focuses (Eck et al, 2009: 160). center that decrease crime and belong to England ministration defines "crime focuses" according to below:

A geographical region that occurrence of crime is more that medium extent or region that criminal occurrence rather than crime distribution through region is more centralization. According to this definition crime site is precise and specific confine that devoted to itself more proportion than total crimes in total confine that is under study (Kalantari and Tavakoli, 2006: 77).

In other words, regions that density and rank of crimes surge are called "crime spots". Researchers and police use this term at some different methods. Some regions are predicated sites with high density crime; other people predicate them crime districts. In this case others consider clusters of these districts. Like researchers, persons who recognize crimes study single occurrence of densities that stand for collection of related crimes.

Also they study small sites that include much crime and riot. Analysts study districts and district clusters with high density crime and riot level and they want to follow these cases with social situations. The most current public perception believes that crime focuses are regions. The most current public perception believe that crime focuses are regions that include more scale than medium extent of riot criminal occurrence or region that people include more scale than medium extent of violence jeopardize and crime. As well as this issue crime focuses include severity and infirmity. For example cool spots are predicated sites or district that crimes scale and riot and disorder lower than medium extent. Also, some crime focuses may be severe crime scale, riot, and disorder.

Methods

Research procedure in this article is analysis comparative and for recognition and perception criminal site patterns in urban level have been used statistic models and basic graph at geographical database environment. The most important statistic tests for using: Mean center test, standard deviation distance, Standard deviation Ellipse and among tests for clustering, Nearest Neighbor Index (NNI) has been employed for recognition crime focuses. In this research, as well as statistic tests some basic graph statistic methods has been used like kernel density estimation. In this relation, related data to crimes consider as a punctuated occurrences at law confine in area 12 of Teheran. That is to say in this research for formation database has been used Office/ Excel software and for analysis comparative and graphic Arc view software at geographical information system (GIS) and lateral software's Case and Crime Analysis.

Introducing 12th municipality region

This region has 1600 Hectares scope (2.3% of Tehran scope) and covers about three-quarters of Tehran Naseri (ancient center of Tehran). This region is limited to Enghelab Street from north region, 17 Shahrivar Street to east region, to Hafez and Vahdate Eslami Street from west region, and to Shosh from south region. The population size of this region is 248048. Regardless of several characteristics such as antiquity and ancient value, being at central area of city, and being at trade center of the city such Tehran Ancient Bazar, this region has several problems and difficulties such as inappropriate population growth in comparison to other regions and other cities. The region experienced a continuous population aversion trend and an immigration of poor population to this area (Bavand consulting engineers, 2004: 2).

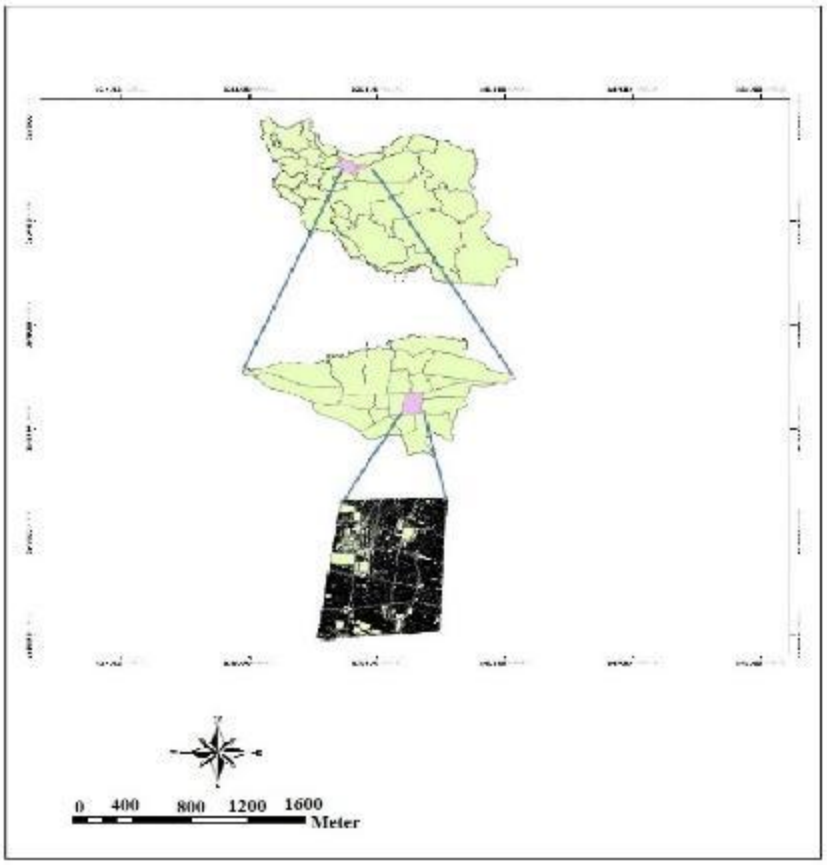

Figure 1: geographical position of 12th municipality region of Tehran

Findings and discussion

Moran test

Moran test has been used for measuring spatial-auto-correlation of social abnormalities in the 12th municipality region in the city of Tehran. Finally, the scattering pattern of social abnormalities has been defined. The Moran statistic was 0.34 and its Z-value was 15.86 for social abnormalities in this region. With respect to the positive Moran value and higher level of Z, scattering pattern of social abnormalities has been measured and was showed in table 1. In other words, it can be said that social abnormalities has a cluster distribution in this area. This has been showed in figure 2. On the other hand, scattering pattern of social abnormalities refer to cluster distribution of social crimes in this region.

Table 1: social abnormalities in the 12th municipality region

Social abnormalities	Frequency	%

Robbery	381	68
Mischief and blackmail	91	16.3
Drug-related offenses	88	15.7
Total	560	100

Table 2: scattering pattern of social abnormalities through Moran index

Moran index	0.34
Z	15.86
Confidence level	99
scattering pattern	Cluster

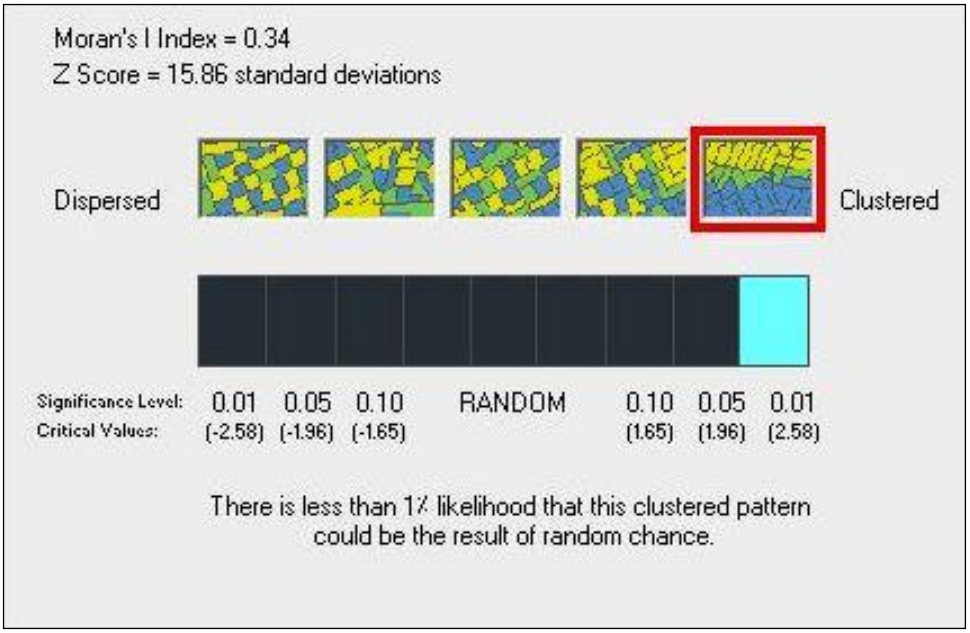

Figure 2: scattering pattern of social abnormalities through Moran index

Kernel Density Estimation Test

The results of the past test were repeated in this study after studying spatial scattering of crimes in the 12th municipality of Tehran. The results showed that the studied crimes pattern is cluster. In other words, some area this region has higher levels of crimes and some others have lower levels.

Investigation of Kernel scattering figure showed that 12th municipality region is a crime hotspot in the northwest of 12th municipality region. This region starts from Ferdosi Street and includes Ferdosi, Manochehri, Hafez, Jomhori, Esteghlal, Lalezare No, Saadi, Emam Khomeyni, Bab Homayon, Khayam, and Sore Esrafil Streets.

Based on the results of this study, the second crimes hotspot is the northeast area of 12th municipality region. These include Emam Hoseyn Sq., Chobi bridge, Mazandaran Street, Namjo Street, Sina Sq., mojahedine Eslam triode, Mojahedine Eslam Street, Shohada Sq., and 17 Shahrivar Street.

The third crimes hotspot is the southwest area of the 12th municipality region in the city of Tehran. These include Mohamadie Sq., Molavi Street, and Molavi crossroad. Examination of crime hotspot indicated that the main center of gravity is central, northwest and northeast area.

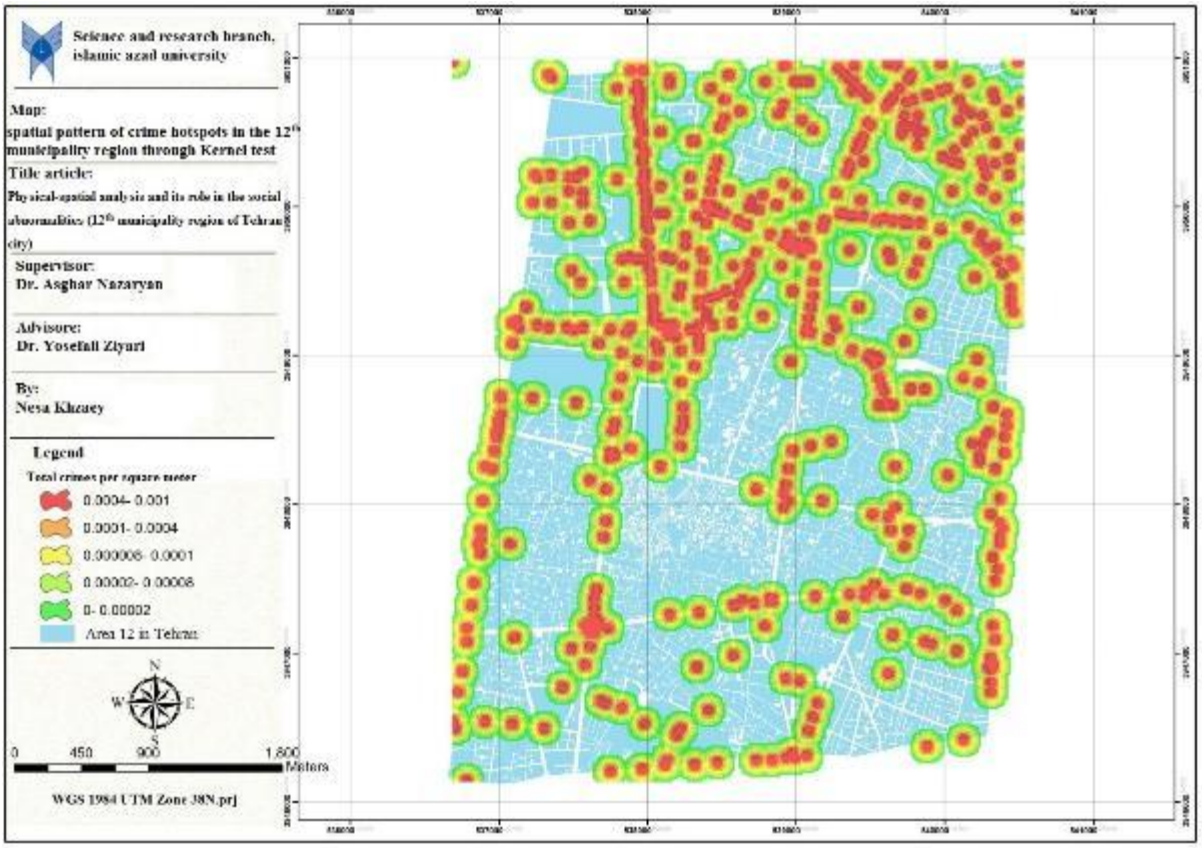

Figure 3: spatial pattern of crime hotspots in the 12th municipality region through Kernel test

Conclusion

In geographic analysis of urban crimes, the relation between the urban space and environment and social behaviors (undesirable and abnormal ones) is of utmost significance. In fact, such a relation, that has been introduced into urban geographic studies during the last few decades, provides a practical framework for spatial and environmental analysis of crime and the study of the relation between anomies and time and place in the urban areas. Generally, this study analyzes the occurrence, quality and the distribution of crimes in the geographic area 12 of Teheran. Benefitting from spatial representation of crimes and integration of these data and the spatial data of the crime spots, as well as socioeconomic indices and place of residence, the grounds have been provided for identification of crime spots, and prediction of potential spots for the occurrence of anomies in the city. Finally, such data can effectively help decreasing the level of crimes in the city. Identification and analysis of urban crime spots provides the opportunity for the police to react faster and more effectively and to try to detect the crime and prosecute and arrest the suspects, or to try to identify the suspects and criminals with previous penal records as well as their place of residence or activity. The utilization of the results of these analyses will help the police to increase the level of its monitoring and care in these areas and to decrease the level of the offences committed in these areas, through allocation of more resources such as facilities and equipments. On the other hand, this method helps us to understand the series of factors and time, place and community conditions the result in the formation of such areas. The

application of the results of this study can also help us prevent the formation of such spots in the future or to identify and control the spots that are highly potential to be corrupted. As the spatial patterns of offence distribution is influenced by the type of land occupancies and structural and population features, which help the formation of crime spots, then the spatial analysis of offences can help us change and modify the situation and to revive and redesign the spaces. On the other hand, some barriers and preventive conditions can be provided for committing offences. In this way, social security can be enhanced and waste of resources and facilities can be avoided and the community will also tread on the safety and security path more easily.

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It seems that the following suggestions can be effective in controlling crimes in the 12th municipality region.

- Because the most important crime hotspot of 12th municipality region is ancient areas, it is necessary to develop appropriate urban development strategies and policies for solving the region's difficulties and structural obstacles. These are considered as most prioritized interests in this area. These should be implemented in short-term and long-term plans. In addition, development of appropriate physical retrofitting in front of crimes is the main solution in decreasing crimes in this region.
- Prioritizing the police efforts based on the use of modern technologies such as geographic information systems.
- Constructing new passages and crossings for local accessibility in times of safety and police efforts.
- Controlling some especial regions through CCTV.
- Location and construction of police centers in the areas with higher levels of crime occurrence, as it seems that lack of police centers is one of the most important reasons of crime occurrence.

- Coordinating and encouraging citizens in preventing crimes and securing social safety.
- Functional screening of inappropriate efforts and increasing tourism and cultural roles with focus on the physical identity
- Creating a comprehensive, efficient, cooperative, and appropriate management plan that uses all of the facilities and creativities for attracting opportunities, preventing threats, and securing safety.
- Allocating and managing necessary equipment, facilities, and services in the crime areas.

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