Journal of Regional Planning

ISSN (Print): 2251-6735
ISSN (Online): 2423-7051

Vol. 9/ No. 36/ Winter 2019

Research Paper

Estimated distribution of urban resilience from the perspective of the earthquake crisis using the spatial stats model (Case Study of Ilam)

Elias Mavedat[1]**:** *Assistant Professor, Department of Urban planning & Design, Faculty of Architecture and Urban Planning, Jundi-Shapur University of Technology, Dezful, Iran*
Parastoo Garmsiri: *Master Student of Architecture, Isfahan University of art, Isfahan, Iran*
Kourosh Momeni: *Associate Professor, Department of Architecture, Faculty of Architecture and Urban Planning, Jundi-Shapur University of Technology, Dezful, Iran*

Received:2018/7/25 *pp:131- 134* *Accepted:21/2/2019*

Abstract

From the point of view of crisis management, Resilience, One of the most important issues is to achieve sustainability. Indeed, it is a way of strengthening communities by using their capacities. The issue of choice in the city of Ilam is located in the Ilam city of Zagros. In terms of seismic state, it is in a dangerous position. So that the Zagros are a has the highest earthquake with magnitude 4 to 4/5 richter has. Based on the importance of the subject, the present study is based on a developmental-applied approach and a combination of descriptive-analytical research methods, Thus, with the field studies of the 14 areas of Ilam and referring to the relevant organizations, the required information has been compiled from two physical-social dimensions. Finally, data analysis with spatial statistics theory and GRAFER, EQS, EXCEL and ArcGIS, VPLS and AMOS-SPSS software were used. The results of the research have shown that, based on the results of the Ilam earthquake classification, vulnerable areas are classified in seven classes. According to the results, zone 2 of area 4 and area 2 of area 3 respectively at a confidence level of 99% and 90% as the cold and hot spatial areas of the city of Ilam, there is a degree of volatility and vulnerability. And based on the results of the Z-Score, which is equal to 586.5%, there is probably less than 1% of the radiation in the city of Ilam.

Keywords: *Resilience, Modeling, Space Statistics, Ilam.*

Extended Abstract

Introduction:

The key characteristic of resilience as a tool is to provide the best scale and method for intervention achieve maximum profit and minimum cost to show. The key characteristic of resilience as a tool is to provide the best scale and method for intervention Reaching the maximum profit and spending the least money. Therefore, urban planning plays a vital role in shaping resilient cities. This requires strategic planning and good urban form to accommodate the issue.

From the point of view of crisis management, Resilience, One of the most important issues is to achieve sustainability. Indeed, it is a way of strengthening communities by using their capacities. The issue of choice in the city of Ilam is located in the Ilam city of Zagros. In terms of seismic state, it is in

[1]. *Corresponding Author's: Email: Mavedate@jsu.ac.ir, Tel: +989133594681*

a dangerous position. So that the Zagros area has the highest earthquake with magnitude 4 to 4/5 richter has. The city of Ilam is first considered as the best place for human gathering and the other as the city most vulnerable to natural disasters in order to mitigate the effects of these catastrophic disasters.Therefore, based on the necessity of the subject, the city of Ilam is located in the Zagros zone. Seismically, Ilam is in a dangerous position. The purpose of this study was to investigate the status of resilience in two social-physical dimensions of the 14 districts of Ilam.

Methodology:

Based on the necessity of the subject, the overall purpose of the present study was to investigate the use of spatial statistics approach to investigate the issue of urban resilience caused by earthquakes in Ilam. This can be used to increase the confidence rating of resilience areas. That is to say, in terms of spatial statistics, the reduction of the error coefficient and the presentation of confidence intervals by increasing the volume of variables.For statistical analysis of spatial statistics it is necessary to consider a statistical model. A random field is usually considered as a statistical model for spatial data.

$$[\ \vdash Z(S): S \in D \sqsubseteq R \wedge d;\ d \geq 1] \dashv$$

Is where D is the set of transition indexes. Each random field can be parsed as follows:

$$Z(S) = \mu(S) + \delta(S)$$

Where μ (S) is the large scale change or trend and δ (S) is the small scale change or random field error process. It is noteworthy that if the finite distribution of any finite number of random variables of a field has a normal distribution , Will be the Gaussian random field. If the mean of the random field is constant and does not depend on the position, that is, E ({Z (S)) and the variance of the expression It is only a function of the distance of the positions, then they are called the random field of the second order. Also, the transform and change functions are always conditional negative and always positive, respectively. In addition to the value of h, the variogram depends on its direction. In other words, only a function of the size of the distance

h means | h | = | S_i-S_j |, they are called (or random field) isotropic.

Based on the importance of the subject, the present study is based on a developmental-applied approach and a combination of descriptive-analytical research methods, Thus, with the field studies of the 14 areas of Ilam and referring to the relevant organizations, the required information has been compiled from two physical-social dimensions. Finally, data analysis with spatial statistics theory and GRAFER, EQS, EXCEL and ArcGIS, VPLS and AMOS-SPSS software were used.

Results and discussion:

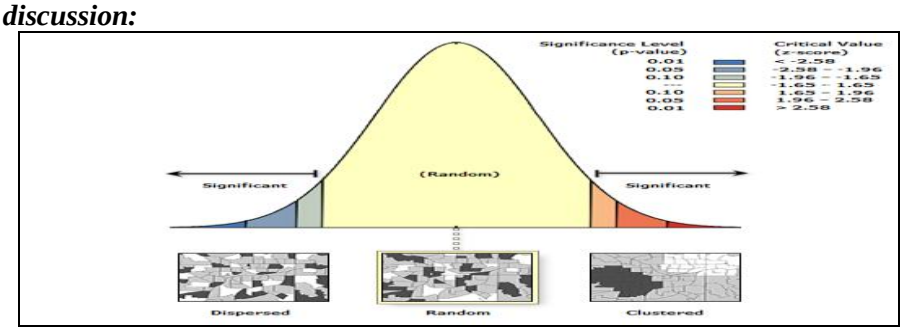

Figure 1- Overall Resilience Pattern of Ilam City Based on Qi Ranking

- Based on the above model: Value is 0.227%. This indicates an inappropriate distribution and random pattern in Ilam.

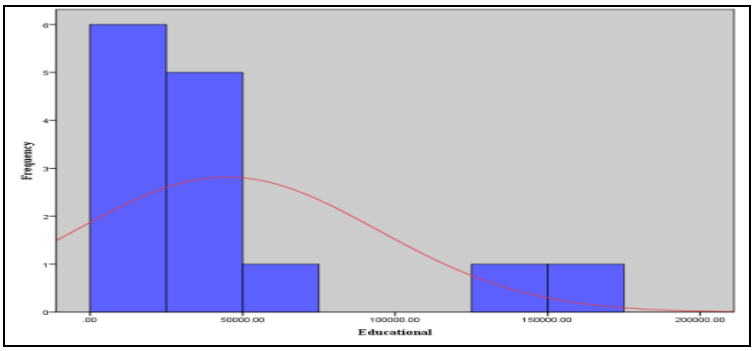

Figure 2- Land Use Resilience Distribution of Ilam City

As mentioned, the estimation of spatial statistics, based on the Kriging interpolation method, is a process by which the value of one quantity at a point with known coordinates can be used to determine the value of the same quantity at other points with known coordinates. Achieved. Kriging is based on weighted moving averages and can be called the best linear estimator. In this method different fitting patterns are used to estimate the resilience rate in the city, then the higher accuracy model is used as a suitable model for mapping the resilience zoning. Kriging methods are based on the variogram definition and the success of the method depends on the selection of the appropriate or optimal variogram model and the variogram is used to determine and describe the spatial structure of the data. Variography is the first step in modeling spatial structure for use in kriging. In this case, we have the following:

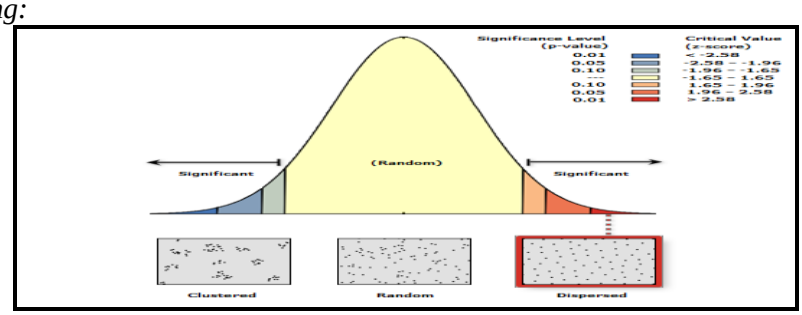

Figure 3- Pattern of social resilience in Ilam city areas

A variogram is used to determine and describe the spatial structure of the data. Variography is the first step in modeling spatial structure for use in kriging. The variogram is calculated by the following relation: In the above relation: (h) γˆ: The value of the variogram for the number of N sample pairs separated by h step or Lag distance, and z (xi + h) Also, the values the x-area variables are at points i and i + h.

- Based on the results, the value was 5.58%. That is probably less than 1 percent of resilience in the city of Ilam. In other words, less than 1% of the elements studied can play a role in resilience of Ilam.

Conclusion:

The results of the research have shown that, based on the results of the Ilam earthquake classification, vulnerable areas are classified in seven classes. According to the results, zone 2 of area 4 and area 2 of area 3 respectively at a confidence level of 99% and 90% as the cold and hot spatial areas of the city of Ilam, there is a degree of volatility and vulnerability. And based on the results of the Z-Score, which is equal to 586.5%, there is probably less than 1% of the radiation in the city of Ilam.

Accordingly, to the research, the characteristics of resilient communities can be summarized as follows:

Internal Independence: Able to operate independently of external control.

Strength: The ability to withstand attacks or other external forces.

Interdependent: with related system components, so that they support one another.

Compatibility: The capacity to learn from experiences and the flexibility to change. In this case, we have the following:Cooperation or Cooperation: Many opportunities and incentives for stakeholder engagement.