

Spatial analysis of the road network role in the city's physical resiliency (A Case Study of zone 1, Tehran)

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Abstract

The network of streets as vital arteries is a central part of the structure of the urban system, which has a very effective role in helping and resilient in times of crisis. The impassability of the northern part of the region, Extremely high construction density, the existence of three major faults in the north (North Tehran fault), the central fault (Niavaran Driven) and the southern fault (Mahmodiyeh fault), and ... from the resilience perspectives have given a special place in the 1 district municipality Tehran. Therefore, the role of the streets of the region during the crisis is very important. The purpose of this study is to evaluate and promote the resilience of the road network in the 1 district against the earthquake. Therefore, in terms of purpose, including applied research and in terms of the methodology based on the evaluation approach, the method of collecting data in a documentary manner and in terms of data type is a mixed research (quantitative and qualitative). Based on the 21 indicators of humanity and their combined weight, in determining the status of the roads in District 1 for the time of crisis, most of the roads in the center of the region have a very unfavorable situation in terms of the risk of a crisis. At the time of the crisis, the road of the center of the region can cripple the aid process completely. According to the results of the research, strategies such as the creation of the northern belt of district 1 and the connection of

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Shahid Babaei highway to the intersection of Chamran-Yadgar Imam and ... are proposed.

Introduction

Cities are complex and continuous systems that are vulnerable to natural and human hazards. Between 2006 and 2015, environmental hazards affect an average of 224 million people a year, causing 70,000 deaths each year and \$ 135 billion in damage.

The district 1 of Tehran municipality due to the presence of many faults near and within its limits, the existence of old and organic textiles with a rural origin with little sustainability against the natural earthquake and limited access of the region has caused this area, including areas vulnerable.

The role of the passageways network in this vulnerability and its impact on other sectors is enormous. The main question of the present research is: What is the passageways network physical resilience of districts of the district 1?

Materials and Methods

The purpose of the present research is to measure and enhance the resilience of the passageways network in the district 1 against earthquakes. Therefore, in terms of purpose, such as applied research and in terms of the methodology based on the evaluation approach, the method of data collection based on the documentary way and in terms of data type is a mixed research (quantitative and qualitative).

Discussion and Results

The present study was used to analyze the resilience of the passageways network of 21 human indicators. Based on these indicators and their combined weight, in determining the status of the 1st district passageways for the time of crisis, most passageways of the districts of the center of the region have a very unfavorable situation in terms of the risk of crisis. At the time of the crisis, the central passageways of the region can completely cripple the relief process.

Conclusions

Urban passageways networks, like blood arteries for living creatures, play a very important role in the cities. During the crisis and after that, the network will be a city that will transport the population, services and relief goods, and if the roads have problems, part of the city will be paralyzed. According to the results of the research, suggestions such as the creation of the northern belt of district 1 and the connection of Shahid Babaei highway to the intersection of Chamran-Yadgar Imam highway and ... are presented.

Key words

urban system, crisis, road network, physical resilience, district 1 of Tehran

References

- 1- Beatley, T. & Newman P. (2013). Biophilic cities are sustainable, resilient cities , **International Journal of Sustainability** 5(8), 3328-3345.
- 2- Katarina Rus, Vojko Kilar, David Koren (2018), Resilience assessment of complex urban systems to natural disasters: A new literature review, **International Journal of Disaster Risk Reduction** ,31 , 311–330.
- 3- Mcntire, D. A (2014). **Disaster response and recovery: strategies and tactics for resilience**, Publishers of John Wiley & Sons, 2 edition.
- 4- Nazmfar, H & Eshqi Chahrborj, A (2016) Assessing the vulnerability of urban road networks to possible earthquakes Case Study: Zone3 of Tehran Municipality, **Journal of Crisis Management** No. 9: 48-61.
- 5- Sharifi, A. (2016), A critical review of selected tools for assessing community resilience, **Ecological Indicators**, 69: 629-647.
- 6- Soltani Fard, H., Zangnee, A., Nodeh, M., Hosseini, F.(1394), Spatial Analysis of the Impact of Transit Network on Urban Vulnerability to Earthquake, **Journal of Environmental Spatial Analysis**, 3(1) 31-49.