ISC
Islamic World Science Citation Center

Journal of
Urban Social Geography

ISSN 2645-7784


# Spatial assessment of factors affecting the social vulnerability of coastal cities (Case Study: cities of Bushehr province)

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## Extended Abstract

**Objective**: Nowadays, coastal areas and the cities in it are considered as the most important components and elements of the urban system and are considered as an opportunity for many countries; So that the development of these cities affects the development of non-urban areas, and vice versa, the vulnerability of these areas causes the vulnerability of other cities. It should be noted that coastal areas are always vulnerable to damages from the environmental hazards and ignoring them will be problematic. Urban areas are often found in hazardous places (for example, along the coasts); in which economic assets and residents increasingly find themselves facing a variety of natural disasters. Increasing sustainability is widely used as a major goal for adaptation and efforts to reduce vulnerability in cities and urban areas. The effects of natural hazards result from both Factors, First pressures and being endangered, and on the other hand the vulnerability of human societies. In other words, in order to reduce the vulnerability to natural hazards and to achieving sustainable development, it is necessary to recognize social-spatial differences of the vulnerability of societies and its causes in addition to recognizing the natural and spatial nature of the hazards. Because merely natural hazards do not lead to harmful results and they only indicate the possibility of damage.

**Methods**: This is a applied research and it is done by descriptive-analytical method that is based on library information and official statistics of the country. The study area of this research is all cities with more than 10 thousand people in Bushehr. Social vulnerability indicators were extracted by using the existing data in the official statistics of the country, then in SPSS, by using factor analysis, factors influencing social vulnerability were summed up and by combining the obtained factors, the final index of social vulnerability was created. In the next step, a hierarchical cluster analysis model (based on the final indicator of social vulnerability) was used and the cities were categorized and analyzed based on homogeneity. Finally, the findings were shown spatially through the Tissen model and the impact of influencing factors on social vulnerability was spatially analyzed through a Geographic Weighted Regression model.

**Results**: The results showed that factors of lack of access to energy and fuel resources, social, physical, economic, dependent population, lack of access to healthy drinking water sources and population flotation had the most impact on social vulnerability of the studied cities. The factors obtained by the factor analysis model were combined and the final index of social vulnerability was obtained. The results of the cluster analysis model (based on the final indicator) showed that cities are classified in five clusters. Most

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of the cities in the fifth cluster had very low social vulnerability. The two cities of Jam and Dayyer port were in the first cluster. Choghadak was in the second cluster alonely and had high social vulnerability. Also, the results of geographic weight regression model showed that the factors contributing to 94% of the underlying causes of social vulnerability in the cities of Bushehr province were explained. It is showed that the greatest effect of independent variable (factors derived from factor analysis) on the dependent variable (final index of social vulnerability), is related to Dashti, Bushehr and Ganaveh cities.

**Conclusion**: It can be said that the resulting factors covers almost all the underlying causes of social vulnerability. Also, according to the results, the most investment is needed to address the vulnerability of the lack of access to energy and fuel resources, as the vulnerability of households is more in this area. Also, due to the similar socioeconomic status of households in the cities of Bushehr province, the social vulnerability of most cities in this province is close to each other. Finally, it can be concluded that due to the inappropriate economic and social conditions of households who are living in coastal cities as well as the occurrence of natural hazards in the area, people living in these cities have a high social vulnerability.

**Keywords**: Social Vulnerability, Cities with more than 10000 Population, Hierarchical Cluster Analysis Model, Factor Analysis, Bushehr.

***Received:*** April 06, 2019 ***Reviewed:*** July 04, 2019 ***Accepted:*** July 25, 2019 ***Published Online:*** December 23, 2019

**Citation:** Zanganehshahraki, S., Shahsavari, M.S., Aminizadeh. A., (2019). ***Spatial assessment of factors affecting the social vulnerability of coastal cities (Case Study: cities of Bushehr province)***. Journal of Urban Social Geography, 6(2), 109-127. **(In Persian)**

DOI: 10.22103/JUSG.2019.1994

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