

# Study the Effects of Unexpected Disaster on Negative Trends of Rural Development Case Study: Varzaghan City's Earthquakes (2012), Iran

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**Abstract:** *In the past decades few earthquakes has occurred in our country, and almost all of them led to the disasters. Occurring earthquakes not only causing damage to the infrastructure's facilities but also affect facilities and area's social structures. In the present study, the impact of the earthquake is examined on Negative Trends of Rural Development of Varzaghan city. According to this fact that vulnerability is considered as social and economic process and we always face with concepts development in rural development programs, so SPSS software is used to calculate and analyze the earthquake's impact on reduction of rural development of Varzaghan city and its direct and significant impact has been studied in the reduction of the rural benefiting of infrastructure- communicational, educational - cultural - social and medical – health facilities. The results show that there is a direct and significant correlation between the happened earthquake and reduction of rural development.*

**Keywords:** Facilities, Vulnerability, Development, Rural, Earthquakes, Varzaghan.

## 1. Introduction

Morphotectonically, the main trend of Iran roughness's is on northern west-southern east that, it is because of placing the Iran shells in place of convergence between the Arabian plate in south and Turan plate in north (Taleghani, 2003:45). Based on current statistics ,it can be expressed that 80 percent of Iran's earthquakes is occurred in depth of zero to 50 km and 12/2 percent, in depth of greater than50 km and the Depth of 7/8 percent has not been calculated (Darvish Zadeh, 2004: 807). Over the last five decades several earthquakes have been occurred in Iran, which almost most of them have been resulted in terrible disaster? BuinZahra earthquake (1963), Rudbar and Manjil (1991), BAM (2002) and Zarand in 2005, reflecting the sad reality (Society of Iranian Engineers, 2008: 12). West Azerbaijan province which is located in northern west of Iran, is considered earthquake-prone, because it is placed in collision of two active seismic belt areas of the country (included Alborz and Khorasan mountains in the northern belt and Zagros Mountains to Mokran in southern east) (Anzabi, 2008,161).What is the history of earthquakes in Iran ,it is important to note that it has elapsed much of the recent seismic activity in Iran's major cities, and the earthquake in their turn period is imminent in these cities(Ahmadi , 2004: 13). But vulnerability is not only the result of seismicity areas, but also social, economic and political processes are the result of an accident that the final status of these processes. (Ahadnezhad Roshty, 2011: 71, 72).

## 2. Statement of the Problem and Research Questions

Decisions for Planning and policy of regions especially in rural areas, we encountered the development of concepts because it will be adopted all the applications scheduled. Therefore, a native development can be defined (Jomehpour, 2009, 55). The development includes aspects of economic,

social, political and cultural changes in quantity and quality and at the same time is a relative internal and external concept (houshyar, 2010, 2). In August21, 1391 Age Solar, shook the two earthquakes of magnitude 2/6and 6Richter Ahar, Azarbaijan Varzaghan and Harris cities and had destructed about120 villages completely. Additionally, more than 300 people in the accident were killed, and more than two thousand people were injured. According to the Housing Foundation of Islamic Revolution, earthquake of Ahar, Varzaghan and Harris fully destroyed 6000 residential units, And 15,000 houses were damaged in East Azarbaijan Province that it will be need to rebuild completely. In this province, 307villages were destroyed between 1-100 percent and as well as some houses were damaged in the four cities. The damage of earthquake on the province was announced eight thousand billion rials. Within a week after the incident, more than 700 aftershocks of Richter scale 6 earthquake and many more than 5 Richter scale earthquakes were occurred. In the present study, we analyzed the impact of the earthquakes occurred in the area of rural development on reduction Varzaghan city, and is trend to find answers to the main research question as following :Do quake city Varzaghan in August 2012; have a great impact in reducing the rural development?

## 3. Hypotheses

Appears, there is a significant direct correlation between the earthquake of 2012and decreased development of the villages of Varzeqan city (in aspects, infrastructure, education and health).

## 4. Research objectives

### 4.1 Main purpose

Determine the Effect of earthquake city Varzaghan August 2012 on the decline of rural development.

**4. 2 Subsidiary Objectives**

Determine the Effect of Earthquake city Varzaghan August 2012 on the reduced benefits of rural, cultural – social and educational possibilities. Determine the Effect of Earthquake city Varzaghan August 2012, on the reduced benefits of rural and health facilities.

**5. Introduction of the Area of Study**

Varzeqan City is located in area of about 12/2368 km <sup>2</sup> in 38° and 23 min up to 38° and 47 min latitude and 46 degrees and 2 minutes to 46 degrees 52 minutes longitude in northern part of East Azerbaijan. The average elevation of the city from the sea level is 1670 m. According to the Population and Housing Census, 5074 residents of the population (48/9%) have lived in urban areas of Varzaghan city, and 48,407 residents (52/90%) have lived in rural areas.

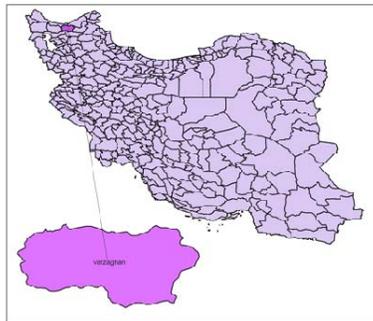


Figure 1: Position of Varzaghan city in Iran

**6. Importance of Research**

Note that, very few studies have been done on Varzaghan city, and due to lack of data which is needed for economic vulnerability, social and cultural rights of the people, the outcomes of the disaster and because of this importance, we will discuss the study of Earthquake that occurred in the villages of Varzaghan city. We discussed and explored the communication importance of effects of this event, the infrastructure communications, educational-cultural-social and medical - health statistics.

**7. Materials and Methods**

Present study has discussed the relationship between, earthquakes in 2012, Varzaghan and negative trends on rural development. Library and field methods are used to collect information and data. For data analysis, and prove or disprove the hypothesis, SPSS software is used to examine the correlation of the variables. Then in analyzing, the linear or non-linear regression was made relationships between variables and positive and negative effects they have on each other.

**8. Theoretical Foundations**

Perhaps, the only definition of rural development is still defined as Mahatma Gandhi that is hidden in all the necessary aspects. He has been introduced rural development, environment, and fits easily and into rural areas and in accordance with applicable environmental

growth and human sublimity (Saidi, 2000:165). Developments issues are with clear implications on the development of concepts, develop, promote, develop and extend the bread than drange of technical, economic and social (Shahbazi, 2010: 4). In addition to improving productivity and income development, are included fundamental changes in institutional structures, social, administrative and public attitudes and opinions that way. In many cases, even customs and beliefs of the people on the covers (Azkia, 2009: 18). Enjoyment, social services, culture and health, is considered the most basic and most essential possibilities in every area of development planning (Taghavai and Khodapanahi, 2010: 97).

**9. Discussion and Conclusions**

Table 1 shows that the correlation value (459/0) between two variables "Earthquake" and "less development", which shows a positive correlation. On the other hand significant level of test (0/000) means that the error coefficient R (05/0) is lower, then the null hypothesis is rejected and with 95% reliability the hypothesis is accepted.

**Table 1:** Pearson correlation between two variables, earthquakes and reduce development

			Earthquake	Reduction development
Spearman's rho	Reduction development	Correlation Coefficient	1	.459**
		Sig.(2-tailed)	.	0
		N	250	250
	Earthquake	Correlation Coefficient	.459**	1
		Sig. (2-tailed)	0	.
		N	250	250

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: author's calculations

In Table 2, with respect to main table regression analysis investigated the linearity or non-linearity of the relationship. As can be seen, the value of (10/716) is greater than 1/96 and the significance level (0/000) error value is less than R (05/0). Thus, the null hypothesis is rejected, namely assuming no linear regression equation and mentioned hypothesis will be accepted with 95% reliability. And we conclude that the August 2012 earthquake have an impact on reduction of development of villages of Varzaghan city.

**Table 2:** Regression analysis earthquake and development Reduction (Coefficients<sup>a</sup>)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.892	0.199		9.518	0
	earthquake	0.538	0.05	0.563	10.716	0

a. Dependent Variable development Reduction

Source: Author's calculations

Hypothesis 1: there is a significant direct relationship between Earthquake of 2012 had Reduction city Varzaghan and rural infrastructure-communications.

As we can see in Table 3, this is the correlation between two variables, "Earthquake" and "having infrastructure-communications" with 0/514, which shows a strong positive correlation. On the other hand there is significance level of the test (000/0) that is less the error coefficient R (0/05). After is rejected assuming the null hypothesis of no relationship and the hypothesis is being accepted with 95%confidence.

**Table 3:** The correlation coefficient between the two variables, earthquakes, and loss benefits of infrastructure-communications (Correlations)

			Earthq- uakes	Having infrastructure- communications
Spearman's rho	Having infrastructur e- communicati ons	Correlation Coefficient	1	.514**
		Sig. (2- tailed)	.	0
		N	250	250
	earthquakes	Correlation Coefficient	.514**	1
		Sig. (2- tailed)	0	.
		N	250	250
**. Correlation is significant at the 0.01 level (2-tailed)				

Source: author's calculations

According to Table 4, the decision was the main regression analysis on the relationship between the linearity or nonlinearity, as specified amount (t = 12/289) is greater than 1/96 and the significant level (000/0) is less than R error coefficient (0/05). Therefore, the null hypothesis rejected means assuming lack linear regression equation, and the hypothesis is accepted with 95%confidence. And we conclude that the earthquake of 2012, the city Varzeqan villages have declined, from the infrastructure-communications, has played a positive role.

**Table 4:** Regression analysis table for two variables, earthquakes, and loss of enjoyment of infrastructure-communications (Coefficients)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.551	0.196		7.917	0
	earthquake	0.609	0.05	0.615	12.29	0
a. Dependent Variable: Having the facilities ,infrastructure-communication						

Source: author's calculations

Second hypothesis: there is a significant and direct relationship between earthquake in August of 2012 Varzaghan city, and reduction of the enjoyment of villages, of educational, cultural – social opportunities.

Table 5, shows the correlation between the two variables "earthquake" and "having infrastructure-communication", which is equal to 0/493 and shows a positive correlation. The

significance cant level of test is (000/0) which it's lower than R error coefficient (0/05). So the hypothesis is confirmed.

**Table5:** Correlation coefficient between the two variables earthquake and loss of enjoyment of educational facilities-cultural-social

			earthqua ke	Benefit from educational opportunities -cultural- social
Spearman's rho	earthquake	Correlation Coefficient	1	.493**
		Sig. (2-tailed)	.	0
		N	250	250
	Benefit from educational opportuniti es-cultural- social	Correlation Coefficient	.493**	1
		Sig. (2-tailed)	0	.
		N	250	250
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: author's calculations

In Table6, the main regression analysis is related to decisions on the linearity or non-linearity. As is clear amount t (10/451) is larger than 1/96andsignificancant level (000/0) is less than t R error coefficient (0/05). So the hypothesis is confirmed.

**Table 6:** Regression analysis table for two variables earthquake and loss of enjoyment of educational facilities-cultural-social

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.51	0.223		6.773	0
	earthquake	0.59	0.056	0.553	10.451	0
a. Dependent Variable: Benefit from educational opportunities-cultural-social						

Source: author's calculations

**Third hypothesis:** there is a significant and direct relationship between the earthquake in August of 2012 of Varzeqan city and have reduced rural health care.

Table 7 shows amount of correlation between two variables "earthquake" and "Benefit from infrastructure -communication", which is equal to 0/268 and shows a positive correlation. The significance level of test is (0/000) that is lower from the R error coefficient (0/05).

As a result null hypothesis is rejected, i.e. assuming no relationship and third hypothesis is accepted with 95% reliability.

**Table 7:** Correlation coefficient between the two variables, earthquakes, and loss of enjoyment of health care – heaths (Correlations)

			<i>earthquake</i>	<i>enjoyment of health care - health</i>
Spearman's rho	earthquake	Correlation Coefficient	1	.268**
		Sig. (2-tailed)	.	0
		N	250	250
	enjoyment of health care - health	Correlation Coefficient	.268**	1
		Sig. (2-tailed)	0	.
		N	250	250
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: author's calculations

In Table8, the main regression analysis is related to decisions on the linearity or non-linearity. As is clear amount of t (5/930) is larger than 1/96 and significant level (0/000) is less than R error coefficient (0/05). So the hypothesis is confirmed. And we conclude that the earthquake of August 2012 had a lot of effects in reducing health facility of Varzeqan city's villages.

**Table 6:** Regression analysis table for two variables earthquake and loss of Entitlement of health

Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
		1	(Constant)	2		
	earthquake	0.4	0.066	0.352	5.93	0

a. Dependent Variable: Entitlement to health

Source: author's calculations

## 10. Summary and Conclusions

In this study the role of the earthquake and its impact on the physical structure and physical vulnerability And the role and impact of the earthquake occurred, the loss villages development was discussed, it was investigated that The result was that there was an earthquake in the Varzaghan city which reduced the development of different aspects of rural infrastructure, communications, medical-health care, education, cultural and social, that can be seen with in text. In general, the occurred earthquake has played a significant impact in reducing rural development of Varzaghan city.

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