

## Influence of Environmental Factors on Sense of Security in Informal Settlements of Hamedan

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### Expanded Abstract

#### Introduction

One of the concerns in contemporary urban societies is the security problems and families serenity. In fact, we can observe the security effects on property values and environmental quality in various urban neighborhoods. Informal settlements due to the specific economic, social, and physical characteristics are known as one of the hot spots and unsafe areas in cities. Although poverty is known as one of the unsafe main factors in informal settlements, but many crimes and inelegances in this neighborhoods have social, cultural, and environmental reasons. Some crimes such as vandalism, dispute and aggression, and trouble are extremely affected by social and physical conditions. Therefore, improving the environmental situation of informal settlements has a key role in their security. Therefore, it is important that we do physical improvement of informal settlements parallel to resolving the social problems. In fact, if we use physical changes for social improvement such as environmental security, the results will be better in regeneration plans. Therefore, in this research we try to recognize the most important physical problems in informal settlements that influence resident's security and then offer main improvement priorities.

In this research, five informal settlements in Hamedan are as case studies that we extracted perception of their residents about environmental security parameters. We selected these informal settlements because they have many security problems notwithstanding improvement plans. The research hypothesis is that there is a relationship between environmental features of informal settlements and their security. Thus, we try to recognize main priorities of security improvement through assessing environmental security parameters.

#### Methodology

Research method is based on analytic-expository approach using documents study and field survey. We gained Theoretical framework through library studies and then extracted security parameters. In order to assess the security based on residents' perception, we use factor analysis and linier multi-variable regression methods. Thus, we designed questions based on five-level Likert method to prepare the questionnaires. Based on Cochran sampling test, we considered

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400 questionnaires, the number of questionnaires are 80 for each neighborhood. After completing questionnaires, the questionnaire data are input to SPSS software for factor analysis method. Then, we used linear multi-variable regression method for assessing relationship between extracted factors and environmental security of informal settlements. At the end, we specified environmental security improvement priorities for each neighborhood.

### Results and discussion

After completing questionnaires, we input the data to SPSS software to create early data matrix. This matrix has 400 rows (one row per one questionnaire) and 23 columns (one column per one variable). Based on factor analysis method, two variables including Texture Legibility and Street view from Buildings have a score lower than 0.4 in Communality Matrix. Hence, they are not suitable for factor analysis method, so they lay away from variables. Finally, when we run the model with 21 variables, quantities of the variables in Communality Matrix became larger than 0.4 and KMO value became equal to 0.732 in Significance value of 0.000. Thus, these values mean correlation between variables is suitable for analysis.

At the end, the variables are classified in 5 environmental security factors. Sum of aggregation variance of the 5 factors are equal to 62.22. To determine the number of factors, the Rotated Component Matrix is formed that this shows position of variables in each factor and we can do naming and interpreting the factors. These factors include:

The first factor (Strange Abate): This factor explains 15.10 % of total variance and is related to transit of non-native vehicles, workshop and troublous activities, presence of Polis, Graffiti, and garbage collection. The second factor (Texture Discipline): This factor explains 13.83 % of total variance and is related to local commercial land uses, thin and narrow alleys, texture density, and non-seeing areas. The third factor (Socialization): This factor explains 12.51 % of total variance and is related to walking convenience, residences acquaintance, presence of people in spaces, and population density. The fourth factor (Welfare Facilities): This factor explains 11.31 % of total variance and is related to street furniture and sitting places, lighting, local green spaces, recreation and playing places, and signage quality. The fifth factor (Maintenance & Function): This factor explains 9.47 % of total variance and is related to empty houses and lands, ruin buildings, and relief accessibility.

Finally, we specify beta coefficient for the factors through linear multi-variable regression method. Thus, the beta coefficient of the first factor is equal to 0.433, second factor equal to 0.381, third factor equal to 0.347, fourth factor equal to 0.319, and fifth factor equal to 0.370. Finally, we calculated the total score of each neighborhood through multiplying the factor score of each neighborhood and coefficient of beta.

### Conclusion

Research findings indicated that Manouchehri neighborhood has tangible strength than other neighborhoods and Dizaj neighborhood has tangible weakness relative to others. Also, we can define some priorities for each neighborhood; thus, priority of Hesar neighborhood is Socialization, priority of Khezr is Texture Discipline, priority of Dizaj is Texture Discipline and Maintenance & Function, priority of Mazdaghineh is Welfare Facilities, and priority of Manouchehri is Socialization. We can also offer following items for improvement of security in informal settlements of Hamedan:

- 1) Streets and sidewalks adjustment,
- 2) Increasing vitality and quality of local public spaces,
- 3) Solidarity and unity of neighborhoods,
- 4) Increasing local services and infrastructures,
- 5) Decreasing neighborhood density,
- 6) Streets hierarchy reformation,
- 7) Lighting and furniture improvement in streets and public spaces,
- 8) Rearrangement of lost space and empty lands,
- 9) Prevalence of local land uses and services,
- 10) Rearrangement and improvement of blocks and open spaces.

**Keywords:** informal settlement, environmental security, marginality, social disorder, Hamedan.

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