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Spatial Analysis and Prioritization of the Intra-Regional Housing Gap Using the Techniques of Planning (A Study on the Cities of Ilam Province)

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Abstract: Housing has always been the most important thing is human life. Having a safe, secure and comfortable shelter is one of the long-term desires of every human being, but this need is also related to other human needs. On the other hand, today this reality is added to other realities that every phenomenon at any moment is a manifestation of the constant analysis and combination of variables that have regular, continuous, and multiplicative correlations; therefore, in investigating the phenomenon of housing, what is important is the relation and influence of its various aspects. The purpose of this study was to investigate the regional indexes affecting housing in Ilam province using TOPSIS technique. The research method is descriptive-analytical and development-applied, and GIS, GRAFER and EXCEL software have been used. The results of the study showed that the density index in the residential unit in the Ilam province between 1996 and 2006, except in 1997 and 1998, has slightly increased, the trend has improved since 1999and has approached the ideal . The average number of households in the residential unit showed that the construction of residential units in the province had been increasing but could not fully compensate for housing shortages. In contrast, the average household in the residential unit in the province had an upward trend. Finally, the TOPSIS model showed that CL was the highest and lowest in the following areas Ilam (0.99), Dehloran (0.13), Ivan (0.09), Mehran (0.08), Abdanan (0.05), Darreshahr (0.04) and Shirvan (0.00).
Keywords: Spatial Analysis, Intra-Regional Gap, Housing Inequality, Ilam Province.
JEL Classification: R21, R31, R34, N95

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1- Introduction

The occurrence of spatial inequality in the world regions, especially in developing countries, has created a wide range of heterogeneous living conditions (Vlahov et al., 2005). Since development in different times and places is not the same in developing countries, so regional inequalities in any scale are abundant in these countries, and in the context of various socio-economic indicators, special areas in these countries, have a more privileged position than other places (Heydarichiyaneh et al., 2015). Among the regional planning criteria for identifying inequalities is the determination of the status of the regions according to the development index. This feature is more prominent among the developing countries than the developed world. On the other hand, historically, the urbanization process among these countries is considered unusual, so that it has affected all issues of developing countries today. Our country has not been an exception to this, and in both cases, it has been experiencing rapid and unplanned growth, especially in recent decades, which has created certain problems in turn (Shafaghi et al., 2004). One of the problems caused by the rapid growth of the population, which is a dilemma for housing for all segments of society, especially young people is housing issue. Housing is important in many aspects of human life. Economically, housing is considered as an asset and capital. Socially, housing provides a favorable situation for the family in order to realize their activities (Salleh, 2008) it also makes the family more stable. The housing sector has a special place in the economy due to its differentiation with other human needs, because economic changes can have a great impact on this sector, moreover, the recession and periodic prosperity of this sector on other economic activities is influential.

In 2009, there were about 1.6 million independent households without housing and 1.5 million households without housing and with minimal facilities. However, given the age pyramid of the country's population and reaching the peak of the young population of the country to the age of employment and marriage, and hence the need for housing, it is necessary to build 700,000 residential units annually, which according to forecasts will reach 1040 thousand people by 2017, in the country; therefore, it is imperative to have a planning system to coordinate between the housing sector and other sectors and between housing components (land, transport system etc.) with infrastructure, public facilities, social services, transportation system, since the nearest and the most familiar phenomenon for human being is a space where he lives, is in touch at different moments, and many psychological and social characteristics of man are manifested in his life. Housing, in addition to physical location, also includes the entire residential environment, which includes all the essential services and facilities necessary for a better living of the family and employment plans, education and hygiene of individuals (Boshagh et al., 2014).

In developing countries, lack of adequate resources, lack of economic management, lack of comprehensive housing planning and other failures in the economic infrastructure of these countries, and the increase in urban population, on the other hand, have provided shelter in these countries in a dense and multifaceted manner (Poormohammadi, 2006). Hence, housing has different dimensions and

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cannot be considered one dimensional, because on the one hand, housing is a physical location and as a shelter it is a basic requirement and the basis of the household, and on the other hand, it is regarded as one of the necessities of development of a residential area and as essential facility (Schwartz, 2014).

The issue of housing in Iran, as in most of the world's societies, is especially in societies where urbanization has grown over the past two decades, is of great importance. The problem of housing in Iran can be felt by the rapid increase in the price of residential units and their rent, especially at the city level, but as various economic and political factors increase the prices of residential units, rising prices or renting the cost of residential units alone does not reflect the housing problem in Iran. With socioeconomic developments in the last few decades in Ilam Province, the need for attention to housing and its planning in the form of urban and regional planning are felt more than ever. This research seeks to investigate the quantitative and qualitative indexes of housing in order to achieve the regional gap of housing and in general the existing housing situation and its comparison with the indicators of urban areas of the province, as well as to identify the existing capabilities inside Provincial Governorate to provide appropriate solutions in the framework of the criteria and standards for the purpose of housing programs, which has raised the following questions:

1. How is the distribution of housing in Ilam province?
2. How is the zoning of the housing gap in Ilam province possible?

2- Literature Review

a) Foreign Researches

Gallent and Robinson (2011) did a research to investigate local views about housing costs and its consequences for local plan in England. The results indicated that there was a very high perception of pricing and development needs in the region under study. In addition, rural residents were most dissatisfied with the official views on rural housing.

Asfour (2012) did a research entitled "Towards an effective strategy to cope with housing land scarcity in the Gaza Strip as a sustainable development priority" aiming to highlight the role of increasing the density of housing in order to face the problem of housing shortage, to investigate the problem of housing shortages in the Gaza Strip due to the growing population in the area. The results indicate that basically, there is a need to provide solutions to balance the dense housing patterns and urban environment.

Zufferey & Chung (2015) investigated housing development, home and homelessness in remote areas of Australia. The findings of this study determine the urban hypotheses of the field of policy on homelessness and emphasize current constraints for indigenous and service providers in remote areas. The results of the study showed that the top-down budget and decisions have taken place without community-based consultation and limited participation, and limit the response to local housing services.

In a research entitled "Social housing estates and sustainable community development in South Korea," housing features and problems were explained and sustainable development issues were investigated in South Korea. The results of the study showed that it is not

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necessary to provide a specific solution and government, private sector and civil society should work together in partnership with each other to provide a comprehensive housing program (Ha, 2008).

b) Iranian Researches

Poormohammadi & Asadi (2014) in a study entitled "Evaluation of Governmental Housing Policies for Low-income Groups (A Case Study of Zanjan City" argued that governmental housing policies have always been taken with little consideration, and this has been influential in its success. These policies have played a positive role in reducing informal settlements, but failed to succeed in state-owned housing projects, land use patterns, and housing needs.

Momtaz et al., (2016) did a research to investigate residential satisfaction variables in housing planning in Mehregan Township. The results showed that the two principles of comprehensive and community based development are important principles in Mehr Housing Policies. Along with the principle of process orientation, residents' satisfaction with the results can be expected. Finally, the impact of the principle of community-based development on the principle of comprehension was examined.

Nasiri & Gholami (2016) did a research to investigate physical development of housing in Lorestan Province. The results indicate that rural housing somehow confirms the behavior of the center-periphery in Lorestan province in terms of physical sustainability in such a way that the cities of the central province have much physical stability and as moving toward peripheral areas, the physical instability increases among the cities of Lorestan province.

Seydayi et al., (2012) investigated housing situation of rural areas in Isfahan Province cities and zoned its rural areas. The results indicate that the selected indices were reduced to five factors by factor analysis method. Among the classified factors, the underlying factor alone highlights the variance. In addition, based on the cluster analysis method, the cities of the province were classified into seven homogeneous groups.

3- Theoretical Background

The concept of housing, in addition to a physical place, contains all residential area that includes all necessary services and facilities required for the well-being of families and individuals' employment, education and health plans. In fact, the general definition and concept of housing is not a residential unit, but it includes all residential environments. In other words, housing is something more than a purely physical shelter and it includes all public services and facilities. Moreover, there should be a fairly long and secure right of possession for the user (Maleki & Sajadiyan, 2016).

At the second forum of UN-Habitat held in Istanbul in 1996, the proper housing is defined as follows:

Suitable shelter does not just mean a roof over anyone's head. Suitable shelter; convenient comfort; adequate space; physical access and security; property security; structural durability; lighting; ventilation and proper heating system; appropriate basic infrastructure such as water supply, sanitation and training, disposal garbage, good environmental quality, proper sanitation, a suitable and accessible place for work and basic facilities, all of which must be affordable to the people (Hataminejad et al., 2006).

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If we consider the urban planning process once based on the decision-making process and again on the basis of the planning subject, then we can understand the location of the building, housing, and its planning activities in a macro-planning framework. However, this planning process, like a system, consists of elements. If you imagine any of these elements as a system, these elements will be this way:

a. Natural System and Urban System

b. The value system has all the small values in relation to housing

c. The planned residential community

d. The production of housing is done by the labor force and other factors for the production of housing

e. Residential guidance and control system include decision making factors in two public and private sectors, legal tool, and planning documents

f. Communication system includes urban communication system and the relationship between residential system and other urban systems

Therefore, developing a comprehensive plan for housing sector requires full identification and deep analysis of wide aspects of housing and its effective factors (Azizi, 2004).

Socio-Economic Views on Housing

Before any research activity, research and theories that are consistent with the subject matter should be studied. Familiarity with the opinions of experts and researchers can be used as guidance for future studies. Hence, for the study of housing and its related programs, it is necessary to use the views and theories expressed about them.

Neoclassical Economics View

In this school, the most profit is for the consumer and the most benefit to the manufacturer. The effective factors on housing prices can be divided into two categories: First, the fundamental factors determined by the supply and demand forces of the market and the second are non-fundamental factors that are not related to the economic performance of housing, but also include forces that affect housing prices outside the function of the housing sector (Gholizadeh, 2008).

Economic view of housing market: The advocates of economic liberalism put the housing problem, like all other economic issues, into the market mechanism and believe that any kind of state interference reduces the effectiveness of the invisible hand. In the opinion of this group, the forces of the market will reciprocally integrate and coordinate without imposing restrictions on the need for economic life along with the growing economy and the development of affordable housing for all. The advocates of economic housing theory suggest that housing needs should be provided through the private sector. The collision and interference of the government with the normal supply and demand mechanism will increase the housing problem. This theory has focused on reducing the role of the state.

Planned view of housing: Indicators of housing, as the most important planning tool and constituting its underlying foundation, can be considered as the most sensitive planning phases. The supply of housing for providing social development, in addition to the residential unit itself, also encompasses the surrounding environment (Poormohammadi, 2006).

Housing view in micro-economy: The housing market is more complex than the market for many other commodities. In fact, there are two markets: one selling market with financial, textiles and social

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factors affecting it, and the other, the rental market for a certain period.

4- Research Method

The essence of the present research is developmental-applied, and in terms of research method, a combination of descriptive, documentary and analytical methods has been used. The research method in urban planning and management means the explanation of the movement to achieve the facts in different aspects. In this way, there are indicators and factors that can change the amount of it. Therefore, the statistical population of the research is Ilam province in the form of seven counties. The combination of housing has been used to determine the housing situation and the intra-regional gap in Ilam province. Data analysis was performed with TOPSIS model and SPSS and EXCEL software.

Ilam province, with an area of 19086 square kilometers, is located in western Iran. This province is one of the forest provinces in Iran and is known for its beauty as Zagros bride. By the year 1963, this province was part of Kermanshah province, which became province according to country divisions in 1963. In these divisions, parts of Lorestan and Khuzestan were joined to Ilam. Geographically, Ilam is restricted from west to Iraq, from east to Lorestan province, north to Kermanshah province, and south to Khuzestan province. Ilam city, the center of Ilam province, is geographically located at 46 degrees 45 minutes east and 32 degrees 15 minutes north latitude and is located geographically in the west and southwest of the country (Statistical Yearbook of Ilam Prtovince, 2006).

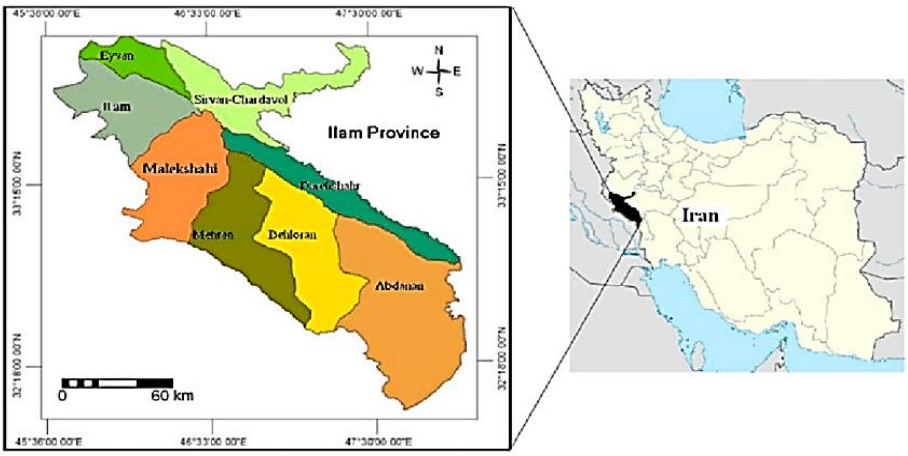


Fig1. Geolocation of the province and the cities of Ilam

5- Results

Housing Situation in Ilam Province in Terms of Land Area and Infrastructure

The average floor area of each residential unit in the urban areas of Ilam province increased from 114 square meters in 1996 to 132 square meters in 2006, with an average annual growth of 1.5 percent.

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Table1. Average land and housing infrastructure in urban areas of Ilam province in 1996 and 2006

Year	Number of units	Infrastructure area	Land area	Average area of the infrastructure	Average of land area
1996	2203	251426	489626	114	222
2006	3131	414634	504805	132	161

Source: (Population and Housing Census, Statistics Center of Iran, 1996 & 2006)

According to Fig 2, the average land use per unit of 222 square meters in 1996 was reduced to 161 square meters in 2006 with a growth rate of -3.16 percent.

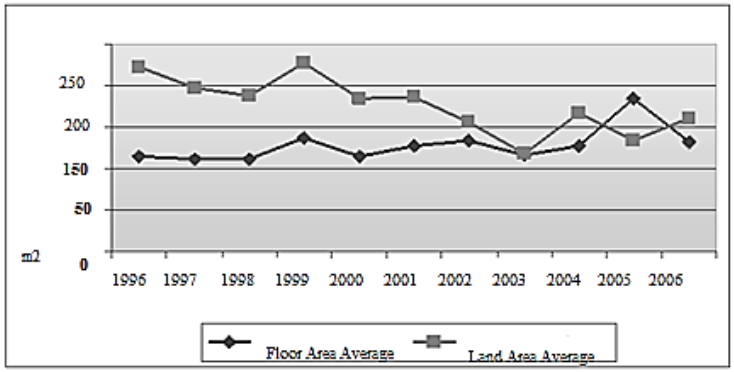


Fig2. The trend of average of the infrastructure and land used in Ilam province during the years 1996-2006

Household status index relative to residential unit in Ilam province

This indicator indicates the number of households per residential unit and is calculated by dividing the number of households into the number of residential units. The smaller the size of the index, the better the housing situation in terms of quantitative, so that if the index is one, this means that there are 100 residential units for every 100 households; therefore, any household has house. On the other hand, the higher the index, the greater the density of the household in the residential unit, which in this case shows the same amount of housing needs.

The study of having a household density in a residential unit shows that in 1996 every 1.168 households had a residential unit. This ratio was 1,142 in urban areas and 1.146 in rural areas, and urban households enjoy better housing than rural households.

Meanwhile, the city of Ilam has the best situation with 1.143 households in the residential unit, after which the city of DarrehShahr with 1.135 households is in the next rank. Abdanan city is also the last with 1.198 households. In this year, the average number of households in the residential unit of the country was 1.15 households (Table 2).

Based on the results of the general census of population and housing in 2006, the index of total density of the province was 1.114, which was 1.0.92 in urban areas and 1.155 in rural areas.

By comparing the density index in the residential unit between 1996 and 2006 and the trend of their changes based on the calculations, the housing inventory and the number of households during these years are presented in Table 3.

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Table2. Household Density Index in Urban and Rural Areas of Ilam Province in 1996

City	Number of residential units		Number of households		Household density in residential unit	
	Urban	Rural	Urban	Rural	Urban	Rural
Abdanan	3008	3078	3415	3879	1.135	1.260
Ilam	20681	4673	2359	5348	1.141	1.144
Ivan	3682	3275	4129	3616	1.121	1.104
DarrehShahr	2791	4832	2152	5503	1.129	1.139
Dehloran	4658	2276	5377	2556	1.154	1.123
Shirvan	1131	10026	1295	11478	1.145	1.145
Mehran	3622	2552	4236	2844	1.170	1.114

Source: (Population and Housing Census, Statistical Center of Iran, 1996)

Table3. Density of residential units in urban areas of Ilam province during 1996 and 2006

Year	Urban residential units	Household in urban areas	Density in residential unit
1375	39683	45296	1.141
1385	63983	69886	1.092

Source: (Population and Housing Census, Statistical Center of Iran, 1996-2006)

Based on the results of Fig3, except for 1997 and 1998, that the index of household density in the residential unit has slightly increased, the index has improved since 1999 and approaches the ideal number of one. Naturally, the proper planning in the housing sector and the successful implementation of the housing reduction policy will be a downward trend feedback.

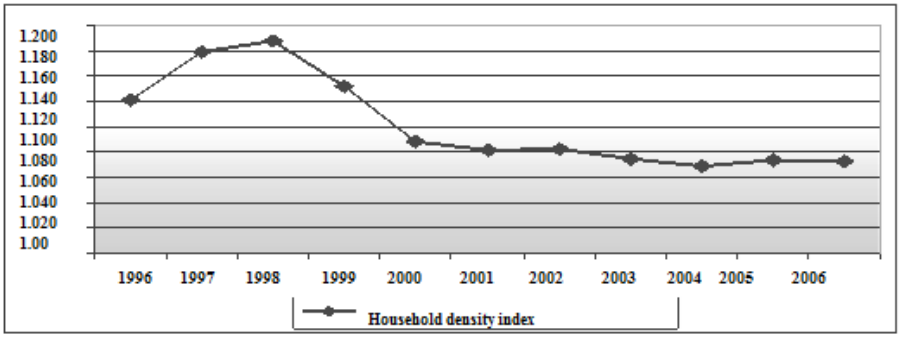


Fig3. The process of changes in the index of household density in a residential unit at the provincial level during the years 1996-2006

The average number of households in the residential unit of the whole country has improved from 1996 to 2006; in the year 1996, the average number of households in the residential unit was 1.108 households, which reached 1.092 households in 2006, thus, it turns out that the construction of residential units is more than the population but has not been able to fully compensate for housing shortage. As it was seen, the average household in the residential unit at the provincial level during the years 1996 to 2006 had upward trend. The main reasons for this increase include the following:

- Population growth due to the activation of the industry and mining, services and other sectors
- Recession in the value added of the building sector and lack of acceptance in housing investment
- Restrictions on banks' credit facilities in creating a building
- The transfer of land from the Housing and Urban Development Organization at expert prices and through auctions

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Average Density in Residential Unit of Ilam Province

In 1996, the density (n) in the residential unit of the province was 6.48 in urban areas, 6.8 and 7.4 in rural areas. The highest density of population was in Dehloran city with 7.04 people and the lowest density in Abdanan city with 4.9 people.

Table4. Housing density in urban and rural areas of Ilam province in 2006

City	Urban areas		Rural areas		Density index	
	Number of household	Residential unit	Number of household	Residential unit	Urban	Rural
Abdanan	5302	4758	4056	3238	1.114	1.253
Ilam	35629	32545	6578	5032	1.095	1.109
Ivan	6615	6157	3425	3078	1.074	1.109
Darreshahr	4719	4436	6768	5727	1.064	1.182
Dehloran	7555	6952	3821	3331	1.087	1.147
Shirvan	3938	3731	11149	10122	1.055	1.101
Mehran	6128	5405	4832	3736	1.134	1.293

Source: (Population and Housing Census, Statistics Center of Iran, 2006)

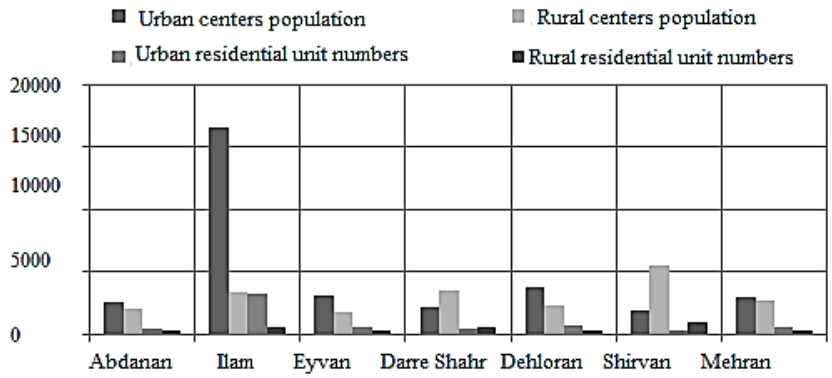


Fig4. Relationship between population and number of residential units in Ilam province by county in 2006

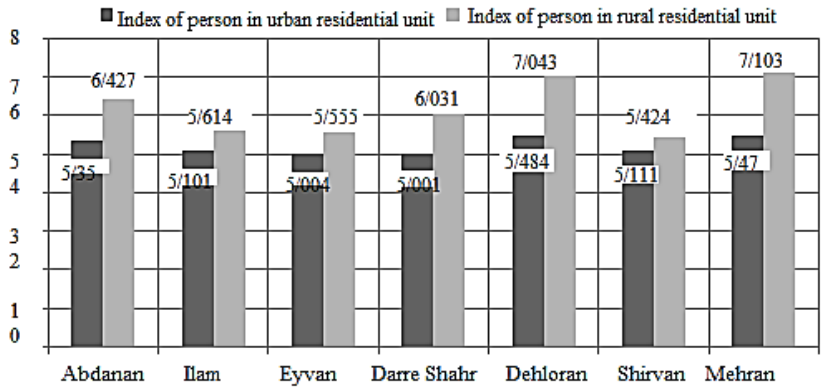


Fig5. Comparison of population density and residential unit in urban and rural areas of Ilam province in 2006

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Average Number of Rooms Per Household

In 1996, the size of the index of the number of rooms for households in the whole province was 3.20, which it was 3.50 rooms in urban areas and 2.82 in rural areas. The largest number of rooms for the household was the city of Ivan with 3.40 rooms and the city of Abdanan with 2.49 rooms minimum (Table 5).

Table5. Household Room Indicator by County in Ilam Province, 1996

City	Number of household		Number of room		Room for household	
	Urban	Rural	Urban	Rural	Urban	Rural
Abdanan	3415	3879	9511	8487	2.79	2.19
Ilam	23593	5348	82373	16035	3.49	3.00
Ivan	4128	3616	15215	11194	3.69	3.10
Darrehshhar	3152	5503	12386	15871	3.93	2.88
Dehloran	5377	2556	20622	7131	3.84	2.79
Shirvan	5.129	11478	4453	31964	3.44	2.78
Mehran	4236	2844	13965	8740	3.27	3.07

Source: (Population and Housing Census, Statistics Center of Iran, 1996)

Average Room in the House in Ilam Province

Based on the results of the Population and Housing Census in 2006, the average number of people in the room in the whole province was 1.85. This ratio was 1.63 in urban areas and 2.18 in rural areas. The lowest density in the city of Ivan with 1.70 people in the room and the city of Abadanan with 2.55 in each room has the highest density of people in the room in the province.

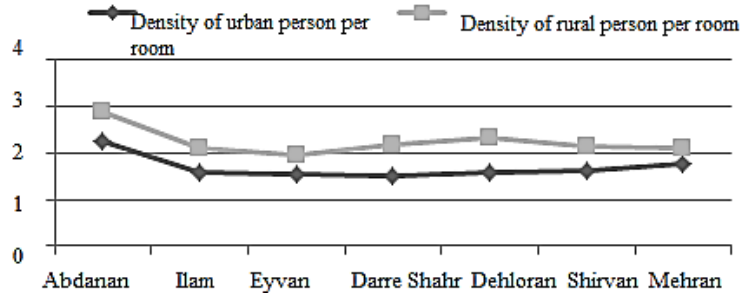


Fig6. Population status to residential area in the cities of Ilam province in 2006

Enjoying a population in each room during the studied years has improved, so in 1996, this ratio was 1.95 in the room, which in 2006, the room for each person, reached 1.85.

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Table6. Indicators of housing situation in the cities of Ilam province in 1996 and 2006

1996					
City	**Person in room**	**Household in residential unit**	**Person in residential unit**	**Room to household**	**Room in residential unit**
Abdanan	2025	1.13	7.11	2.79	2.79
Ilam	1.60	1.14	6.37	3.49	3.98
Ivan	1.54	1.12	6.37	3.69	4.13
Darrehshhar	1.49	1.12	6.59	3.93	4.44
Dehloran	1.59	1.15	7.03	3.84	4.43
Shirvan	1.63	1.14	6.43	3.44	3.94
Mehran	1.73	1.7	6.76	3.27	3.82
2006					
City	**Person in room**	**Household in residential unit**	**Person in residential unit**	**Room to household**	**Room in residential unit**
Abdanan	1.114	3.35	1.56	3.01	5.35
Ilam	1.09	3.26	1.35	2.97	5.10
Ivan	1.07	3.56	1.54	3.31	5.01
Darrehshhar	1.06	3.80	1.69	3.48	5.00
Dehloran	1.08	3.55	1.53	3.27	5.48
Shirvan	1.05	3.01	1.59	2.85	5.11
Mehran	1.13	3.57	1.40	3.15	5.47

Source: (Population and Housing Census, Statistics Center of Iran, 1996-2006)

According to the stated methods, ranking of cities in the province during the period of 1996 and 2006 was determined. The cities of Abdanan and Mehran remain unchanged at the end of the ranking, but changes have been made to the top of this ranking so that the city of Shirvan and Darreshahr with a four-step climb are at the forefront, and the city of Ilam has fallen to fifth place. It should also be noted that the city of Dehloran, which in the second place in 1996, has won the fourth place in 2006 (Fig7).

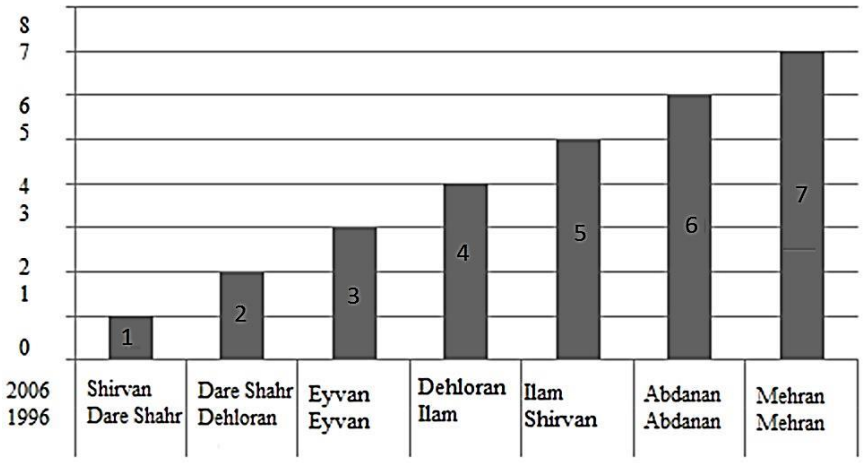


Fig7. Ranking of the cities of Ilam province in the combined index of housing in the years 1996 and 2006

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The Situation of the Intra-regional Gap in the Housing Composition Index Based on Quantitative and Statistical Models

Entropy Coefficient Index

This model is a criterion for measuring the distribution of urban population and the distribution of the number of cities in the urban classes of a region. On the model theory, when entropy approaches zero, more concentration or increased concentration or inequality in the distribution of the index among cities is indicative and moving towards one and above, it shows a more balanced distribution. Using this model, we can find the spatial distribution of the indicator in cities (Fanni, 2003). The method of using the entropy model is as follows:

$$G = \frac{H}{LnK} \quad , \quad H = -\sum P_i LnP_i$$

In the above model, H is the sum of abundance in the frequency of non-linear logarithms, P_i: relative frequency, L_nP_i: the frequency of non-linear logarithms, K: the number of classes and G: the degree of entropy (Varesi et al., 2007).

Williamson Index

This index is known as changes in the weighting coefficient of the population and is used as follows:

$$WI = \frac{1}{\bar{y}}[\sum_{i=1}^{n}(y_i \quad y)^2 \frac{Ai}{At_0t}]^{\frac{1}{2}}$$

In the above equation, A_i: the population of the region i, At_0t is the total population of the regions, Y_i is the regional development index (for example, per capita of the infrastructure or per room), Y is the mean of the index and n is the number of regions or districts.

In this section, we first choose the appropriate method for calculating the gap between regions. Given the existing information limitations and the type of housing gap analysis, the TOPSIS model has been used to investigate the intra-regional gap. Fig8 summarizes the indicators used in the research.

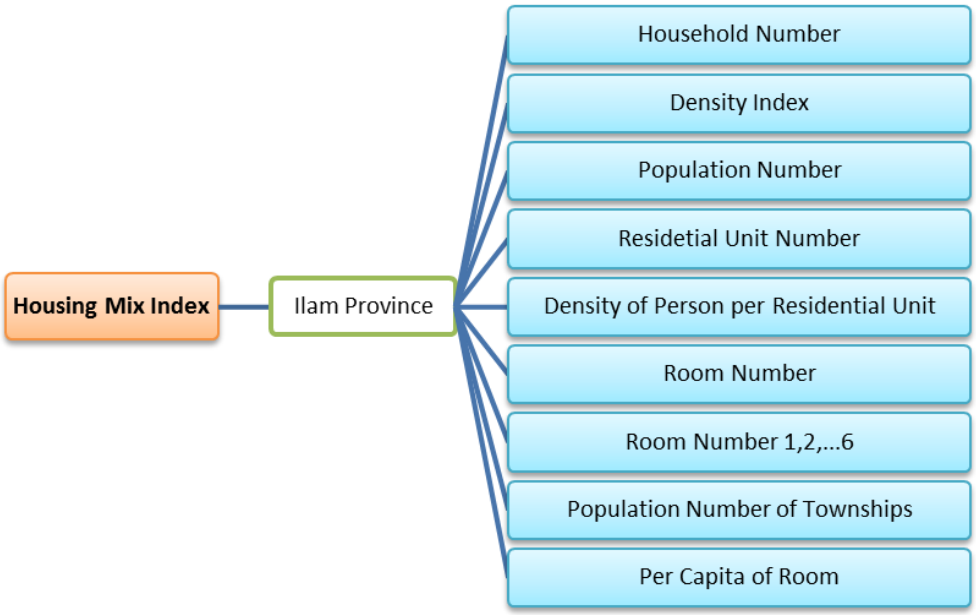


Fig8. Housing compound index in TOPSIS model

TOPSIS Model

The technique is based on the notion that the choice option should have the least distance with the ideal negative solution (the worst possible scenario). It is assumed that the utility of each

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indicator is uniformly increasing or decreasing. The implementation of this technique involves the following steps:

1. Formation of data matrix based on n index and m option

$$r_{ij}=\frac{a_{ij}}{\sqrt{\sum_{k=1}^{m} a_{kj}^2}}$$

2. Weight the standard matrix: For weighting, Shannon entropy technique can be used. In order to weigh with Shannon entropy, the following steps should be followed:

$$Wj=\frac{dj}{\sum_{j=1}^{n} dj}$$

3. Determine the distance between i-th option from the ideal option (the highest performance of each index) that it represents with A +

$A+ = \{(\max v_{ij}|j \in j),(\min v_{ij}|j \in j)\}$

$A-= \{(\min v_{ij}|j \in j),(\max v_{ij}|j \in j)\}$

4. Set the distance criterion for the ideal option (si +) and the minimum option (si-)

$$s_i^+ = \sqrt{\sum_{i=1}^{n}\left(v_{ij}-v_i^+\right)^2}\, s_i^-$$

$$= \sqrt{\sum_{i=1}^{n}\left(v_{ij}-v_i^-\right)^2}$$

5. Determine a coefficient equal to the minimum distance (si-) divided by the total minimum distance (si-) and the distance (si +) of the distance represented by (ci +)

$$cl_-^+ = \frac{s_i^-}{s_i^- + s_i^+}$$

3. The ranking of options is based on the amount of c_l that fluctuates between zero and one. The number of one represents the highest and zero represents the lowest rank (Modet and SafaiPour, 2013). Based on the implementation of the TOPSIS model and weighting with the Entropy model, calculations are performed and the results are presented in Table 7.

Table7. Normalization with Shannon entropy technique

City	d_j	W_j
Abdanan	0.191	0.202
Ilam	0.185	0.196
Ivan	0.184	0.195
Darrehshhar	0.001	0.001
Dehloran	0.198	0.210
Shirvan	0.001	0.001
Mehran	0.184	0.195

According to the results of Table 8, Ilam and Ivan have almost the same weight among the variables studied. They also have the same degree of distance. Dehloran city has the highest weight in other cities, so it also has the most distances with other cities. Eventually, the city of Shirvan has the lowest weight in the province.

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Table8. Determination of TOPSIS by county of Ilam province

City	TOPSIS model
Abdanan	0.046
Ilam	0.999
Ivan	0.092
Darrehshhar	0.038
Dehloran	0.132
Shirvan	0.001
Mehran	0.076

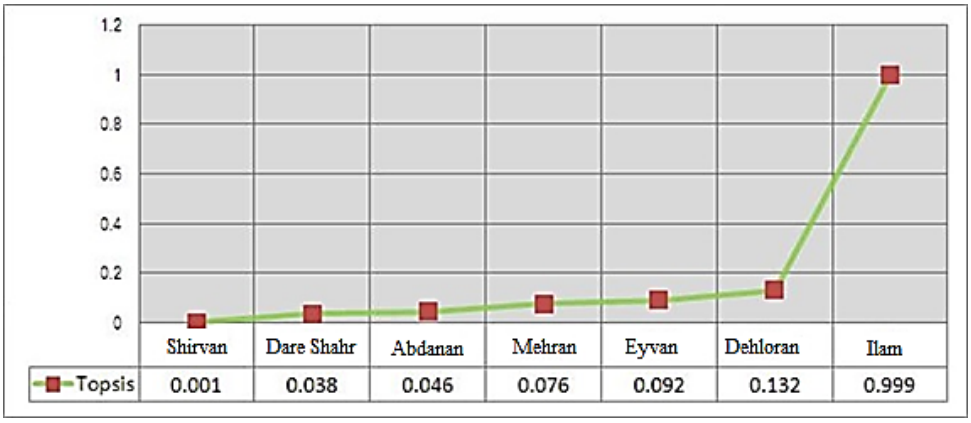


Fig9. Ranking of cities in Ilam province based on TOPSIS model in 2006

As a result, with the calculations done in seven provinces of Ilam province, the five cities of Darrehshahr, Ivan, Dehloran, Shirvan and Ilam have a higher per capita than average per capita room, while Abdanan and Mehran counties have 0.4445 and 0.5655 less than average per capita (0.6101). It is worth noting that because of the squares of models and relationships, all cities that even have a per capita higher than average per capita also have an intra-regional gap.

6- Conclusion and Discussion

The city is a complex public system that consists of various components and elements and various environmental, social, economic, physical, structures etc. These components, elements and structures are interconnected and interact with each other; therefore, planning for the city is very complex and requires a strong understanding of the various issues and their relationship and their impact on each other needing more time. Over the past decades, with increasing population and industrial growth of the country, migration to cities, increasing urban population and reducing household size, providing housing for families has faced numerous problems. The periods of recession and fluctuations in inflation, and the excessive rise in the price of housing and land, and subsequent rents, and the transformation of effective demand into ineffective demand, are evidence of the above.

The issue of housing in Iran is also very important, as is the case with most of the world's societies, especially in societies where urbanization has grown over the last two decades. The problem of housing in Iran can be felt by the rapid increase in the price of residential units and their rent, especially at the city level.

Nevertheless, since the various economic and political factors increase the prices of residential units, rising prices or renting of residential units alone

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does not reflect the housing problem in Iran; therefore, in order to achieve the desired housing planning, the past trend in the economic and social aspects affecting the housing market and residential developments of the community should be analyzed, while recognizing the current status of housing and facilities. Furthermore, it is necessary that socioeconomic changes in the future be intercepted on the basis of national, regional and urban planning, and that the interactions of these developments in the housing sector and housing needs are predicted. The current research has examined the issue of housing in Ilam province with a developmental-applied approach. The results showed that the density index in the residential unit between 1996 and 2006 in the province of Ilam, except in 1997 and 1998, has slightly increased, the index has been improving since 1999 and then approaches the ideal number one.

Based on the preliminary findings of the research and calculations, it was determined that:

- The average floor area of each residential unit in the urban areas of Ilam province increased from 1996 to 2006, with an average annual growth of 1.5%.

- The study of the number of households in the residential unit showed that in 1996, every 1.168 households had a residential unit and urban households had better housing units than rural households.

- The total residential density index of the province in 2006 was equal to 1.114, which was 1.092 in urban areas, and 1.155 in rural areas.

The density (n) in each residential unit of the province was 6.48 in urban areas, 6.8 and 7.04 in rural areas. The highest amount was in Dehloran and the lowest density was in Abdanan.

Based on the results of the TOPSIS model and entropy in order to answer the question of how the zoning of the regional housing gap in Ilam province was identified, among the studied variables, Dehloran city has the highest weight of the variables among the other cities. Similarly, it has the greatest distance with other cities. Finally, the city of Shirvan has the least impact on the province, and the cities of Abdanan and Mehran have a lower average per capita (0.6101) with 0.4445 and 0.5655 per capita, respectively.

Finally, TOPSIS model showed that CL was the highest and the least, including Ilam (0.99), Dehloran (0.13), Ivan (0.09), Mehran (0.07), Abdanan (0.04) Darreshahr (0.03) and Shirvan (0.00).

The housing and building market in healthy economies is considered as a leading and growing economy in economic studies and has always contributed to gross domestic product, global and regional economies; this is due to the dynamism of the four hundred other jobs indirectly. Although this sector is regarded as a growth factor in healthy economies, it has led to the emergence of chronic Dutch disease in developing countries. Therefore, the disregard for the spatial organization and the difference between the domains of housing and their qualitative factors, both on the residential scale and on the scale of the collection, has virtually overestimated the quantity. However, the final satisfaction of housing applicants lies not only in quantity but also in quality. Given the plurality of population and the need for housing, because of the uncertainty of the audience or their demands, we need to plan for a

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community that can support at all levels, including the environmental, economic and social. Therefore, it is recommended to consider the following:

- Housing planning with regard to social structure and cultural needs

- Understanding the functions of each component of urban housing and its proper adaptation to today's needs

- Attention to housing comfort and use of resilient housing patterns in adaptation to sustainable urban development

- All-round planning for sustainable urban housing systems to prevent natural damage

Although it should be said that in general, the sustainability of housing in the province of Ilam is not in a favorable position, the focus of more policies related to the sustainability of housing should be emphasized over the peripheral area of the province. Of course, this should not lead to the lack of attention to the rest of the cities, but the creation of appropriate substrates for achieving the physical stability of housing requires comprehensive attention to all areas.

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