

Research Paper

Identifying and Analyzing the Spatial Pattern of Foreign Immigrant Settlement in the Rural and Urban Environment of Iran

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ABSTRACT

During the past 40 years, Iran has faced vast important demographic changes. Even though Iran has not experienced permanent stability after the Islamic revolution and constantly has dealt with matters such as war, threats, and sanctions, it has been homeward for refugees from neighboring and non-neighboring countries. These refugees originated from Afghanistan, Iraq, and Pakistan. Except for these three major groups, there are some immigrants from Turkey, Turkmenistan, Armenia, etc. that inhabit in rural and urban settlements in Iran. Moran's I statistic has been applied to determine the spatial pattern of location selection and local visualization of the pattern, Getis-Ord G_i^* statistic employed. The results express that in both rural and urban areas, the aliens' location selection pattern is shifting from concentration to disperse. Furthermore, 33 zones in the hotspot have been found in the local survey of the population composition index, for rural areas. We have also observed 54 zones in the hotspot for urban areas.

Key words:

Immigrant Settlement, Rural, Urban, Moran's I, Hotspot

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Extended Abstract

1. Introduction

Iran is ranked as the 23rd country in the world in term of the destination country for immigration. Locating beside the tow sending country- Afghanistan and Iraq-, Iran has faced a lot of problems like choosing a location for resident and changing the population composition of villages and cities. This research aims at both diagnosing the spatial pattern of im-

migrant distribution from 2011 to 2016 and determining the hotspot of this composition and differences based on census 2016 in rural and urban zones.

2. Methodology

This paper is a kind of quantitative one. Research data are analyzed by spatial statistics tools in ArcGIS 10.3 edition. Moran's I statistic has been applied to reveal the spatial pattern trend. Distribution points can have three different patterns including random, cluster and scatter. In the real world, most of the patterns are arranged between random

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and scatter or random and cluster. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The G_i^* statistic can identify the areas in which local averages are significantly higher than global averages. The resultant z-scores and p-values tell us where features with either high or low values cluster spatially. Getis-Ord G_i^* is employed to diagnose the high-risk region in the rural and urban zone.

3. Results

Moran's I has been calculated for both years to survey immigrant's trend. In rural data, Moran's I is approximately near +1 indicating that immigrants in the rural zone have spatial autocorrelation and cluster pattern. The decrease in Z score and Moran's I states that immigrants' concentration in the rustic region has diminished.

Immigrants in rustic region

2011= Moran's Index: 0.306755

2016= Moran's Index: 0.268129

Urban data show immigrants in 2011 in the urban region have autocorrelation and cluster distribution. However, Moran's I holds a number between +1.65 to -1.65 in 2016 implying that the spatial distribution pattern is random. During this 5 years, immigrants' concentration decreased.

Immigrants in urban region

2011= Moran's Index: 0.147942

2016= Moran's Index: 0.031951

Getis-Ord G_i^* calculated for every originated country and the maps showed the hotspot for population composition. Afghanistan refugees' hotspot is located in the rustic region in the center of Iran. Villages in Tehran, Alborz, Qom, West of Semnan and east of Isfahan provinces are in high-risk of changing population composition. Villages in North of Ilam and most of Khuzestan lied down in hotspot of Iraq concentration. Pakistani refugees have chosen the rustic region in Sistan and Baluchistan and the south of Hormozgan provinces.

The population composition hotspot clustered in the 3 groups for Afghanistan refugees in the urban region. Qom, a vast part of Tehran, west of Semnan and central part of Isfahan are determined as a first cluster, while the north-west of Kerman as a second cluster and south of Fras, west of Hormozgan and west of Bushehr as the third cluster. For Iraq, the whole area of Ilam, and west part of Khuzestan lied down in hotspot and Pakistani refugees concentrated in Qom and more than a half of Sistan and Baluchistan have stuck in the hotspot.

4. Discussion

In an overview, the presence of immigrants in any country makes some problems. The most critical concerns will be more prominent in areas that will be influenced by the demographic composition in rural and urban areas. In this study, distinguishing hot spots of immigrants by country, it was necessary to extract the general status of the immigrants relevant to the Iranian population in the cities and villages to identify the sensitive areas in terms of demographic composition. These findings are represented in tables (1) and (2):

Table 1. Rural Hotspots and G_i (Zscore).

Cities in hotspots for the rural population	G_i
Naein, Semnan, Sorkkeh, Garmsar, Qom, Tehran, Shemiranat, Damavand, Pardis, Pakdasht, Pishva, Gharchak, Varamin, Rey, Robat Karim, Baharestan, Islam Shahr, Shahriar, Ghods, Malard, Fardis, Karaj, Savojbolagh, Nazar Abad, Eshtehard-Abeyek, Zarandie	3
Mehdi Shahr, Rafsanjan, Bardsir	2
Aran va Bidgol, Sadough, Mehriz	1

Source: Authors findings, 2019

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Table 2. Uural Hotspots and G_i (Zscore).

Cities in hotspots for the rural population	G_i
Naein, Ardestan, Natanz, Shahinshahr, Kashan, Aran and Bidgol, Delijan, Zarandieh, Qom, Semnan, Sorkkeh, Aradan, Garmsar, Mehdi Shahr, Tehran, Firoozkooch, Damavand, Pardis, Pakdasht, Pishva, Qarchak, Varamin, Rey- Rabat Karim-Baharestan-Islam-Shahr-Babak-Pomegranate-Rafsanjan-Zarand-Bardesir-Bafgh-Garash-Lamard	3
Sirjan, Ashtian, kavar, Jahrom, Ghirokarzin, Khonj, Larestan, Bastak, Parsian, Asaluyeh	2
Sarvestan-Kangan-Mehr-Bandarlengeh-Sadough-Isfahan-Shemiranat-Karaj-Savojbolagh-Khomeini Shahr	1

Source: Authors findings, 2019

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5. Conclusion

The areas which are heavily populated by non-Iranians counties in both rural and urban regions are more in danger of disrupting population composition. The hotspot rural areas are important because the rural environment not only is more vulnerable than the urban environment due to its small size but also reflects the changes stronger and earlier. In cities, the formation of immigrant subcultures is attaining power, so in both areas, changing the composition of the population will lead to many challenges, especially in areas lying down in the border. Therefore, it is necessary to redefine the rules of immigrants residing in the country.

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Conflict of Interest

The authors declared no conflicts of interest