

Population Distribution In The Kurdistan Region, Iraq: Experiences From 1957- 2009 Population Census

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Abstract

Population distribution shows the spatial spread of people within the area available. Concerns over spatial distribution of the population have great importance in the spatial planning at national and local levels. Population growth (or decline) is influenced by many factors that fall into the broad realms of demographic characteristics, and natural factors over space and time. In the course of the current study, a set of methods has been used to achieve the goals of this work. This includes the regional, systematic, and descriptive Approaches Furthermore, a range of quantitative approaches and statistical techniques have been utilized in order to give an accurate and more reliable description of the data structure and demographic variables within this work.

The results suggest the physical and human factors have different effects on population change over time and across national and local regions. Their effects depend upon the general trend of population distribution processes, local dynamics, and areal characteristics. Overall, a systematic examination of population changes should consider a variety of factors, temporal and spatial variation of their effects, and spatial spillover effects. The examination should have the flexibility to identify and incorporate influential factors at a given point in time and space, not adhere to a single set of drivers in all circumstances. The findings have important implications for population predictions used for local and regional planning.

Keyword: Population growth, Population distribution, Physical factors, Human factors, Kurdistan Region

1. Introduction

Population distribution refers to the proportional distribution of the population over available land area. It gives a reflection of the burden to the land resources of public services available in an area. Population distribution also reflects the environmental implications of population to specific areas (Cohen 1997). On the other hand, population density commonly used to refer to the number of people per land area (square kilometer, square mile). It is the ratio of the population to the land area. Population density gives the average number of people who occupy certain piece of land. It also shows the concentration of the population over a land area (Haupt 2000). Though population density is a good indicator of aerial population distribution, it conceals many of the internal disparities in population concentration and its spatial distribution. People are normally very selective with regards to the

settlements locations. Similarly, certain human activities are selective in nature in terms of location and suitability.

The spatial analysis typically separated into two phases; the first one is the exploratory spatial data analysis that concerns description rather than explanation. The second phase called confirmatory data analysis, which involves modeling the impact of spatial structure on human behavior and their activities (Can 1998). In this study, we followed the first phase. Analysis of population distribution requires periodic and systematic information on population size and its spatial distribution over time. However, this work is not easy to achieve such goal due to require of reliable data other than from the census data (We must point to the fact that formal census in terms of kurds in this country were influenced greatly by central government's point of view. The policy of Arabization and displacement by successive governments in Iraq during the last four decades has had a negative impact on the pattern of population distribution in the Region. These circumstances paved the way for a systematic ethnic cleaning during 1980s, reached its climax in 16.March.1988 with the chemical attack on Halabja). Census data are often used to estimate the population growth and its distribution over the inter censal periods.

In order to show the extent of change with regards to population growth and distribution, an attempt has been made in this paper to analyze the national and regional data in different periods of time. The influence of population on both the natural resources and socio-economic environments make it important to examine the trends in population distribution and growth (Gallup *et al.* 1999; Sachs 2005).

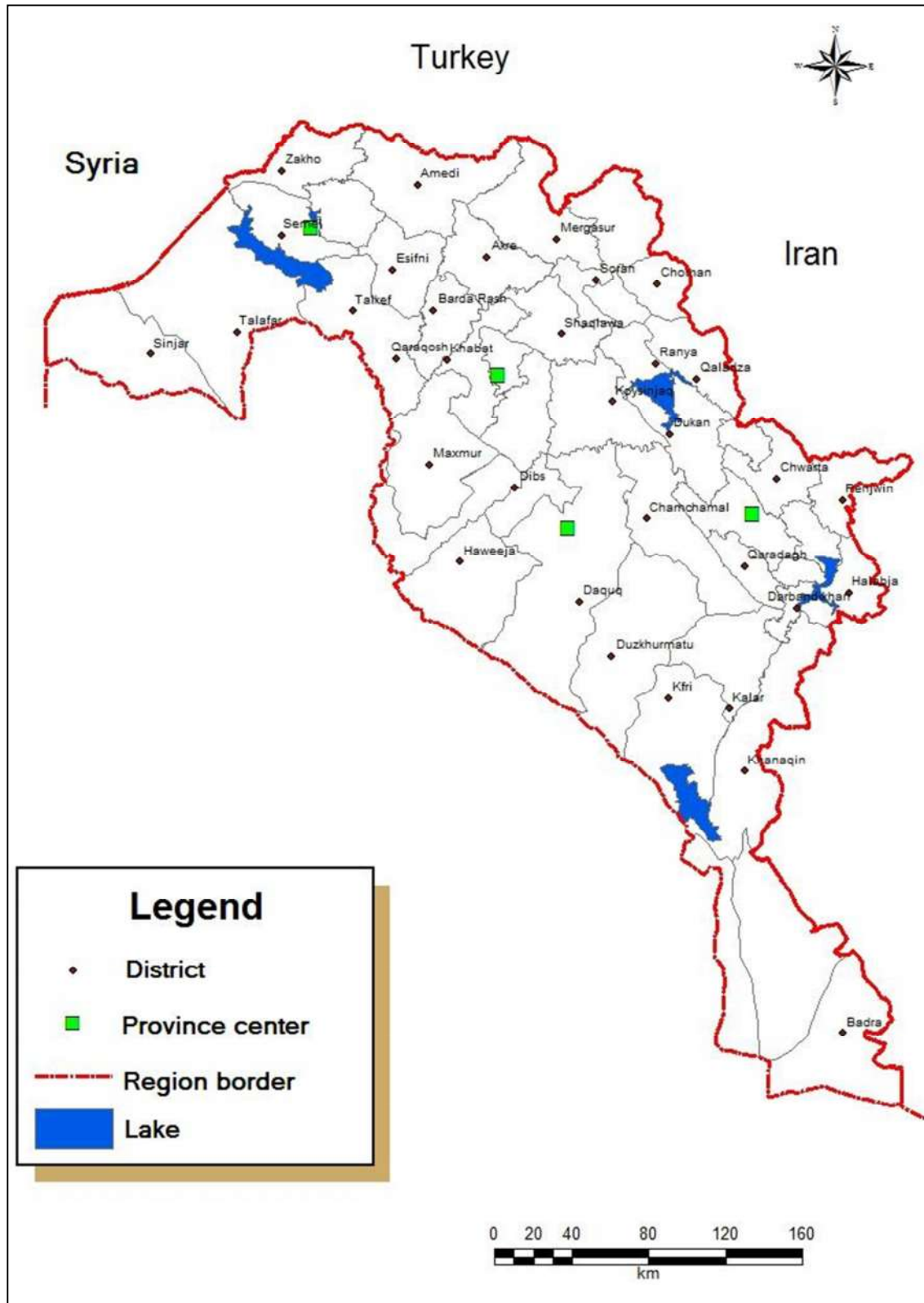
This is particularly significant in the planning and implementation of rural development programs in the region. The above discussion suggest that no assessment of resource potentials and prospects for sustainable development can be complete without proper understanding of the aerial distribution and concentration of the population. The purpose of this paper, therefore, is to discuss the population distribution as observed in Population Census.

2. Data and method

The data used in this analytical paper were obtained mainly from the 1957, 1965, 1977 and 1987 censuses that organized by the Iraqi Government. Whereas, the 2009 data obtained from the population survey data undertaken by the Ministry of planning in Kurdistan region. For the purposes of this study, Kurdistan region has been selected for analysis in this paper. Figure1.

The Kurdish territory of Iraqi Kurdistan region includes Provinces of Dohuk, Erbil, Sulaimany and Kirkuk in addition to parts of Dyala and Mosul provinces. The area of the Kurdish region in Iraq is about 78736 sq km, and thus it forms 18% of the total area of Iraq (Mohammed 1998). The Kurdish population in Iraq is about six million, of whom 2/3 inhabiting the four provinces of Erbil, Sulaimanyah, Dohuk and Kirkuk, remaining population inhabit in parts of Dyala and Mosul provinces (Stansfield 2003).

Figure1. Kurdistan Region-Iraq

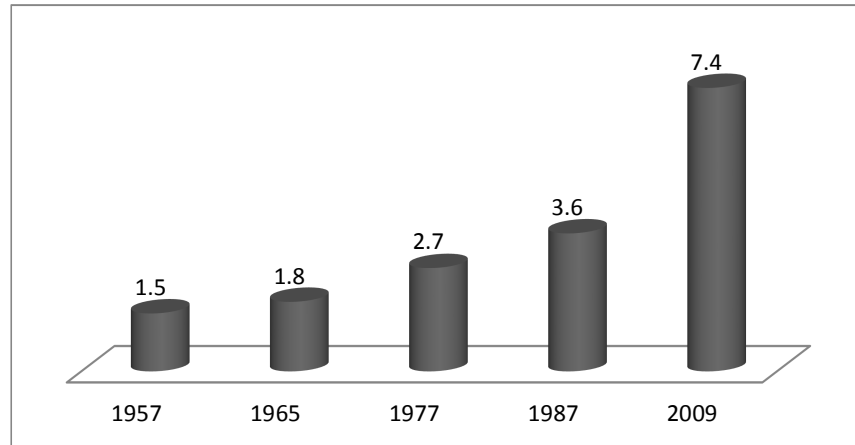


Source: Depending on; Hashim Y. Hadad& Sardar Mohammed, Kurdistan region Atlas, 2009.

3. The size of Kurdish population between 1957- 2009

Since independence, Iraq has conducted several national population censuses, which indicated that the population of the Kurds increased from 1.5 million in 1957 to 1.8 million in 1965, 2.7 million in 1977, 3.6 million in 1987 and 7.4 million in 2009. Figure 2 shows the population growth between 1957 and 2009 in the Kurdistan region.

Figure2. Population in Kurdistan region-Iraq (Population in millions)



Source:

- 1- Republic of Iraq. 1961. Statistical Data collection for 1957 Census. Table (8), Baghdad.
- 2- Republic of Iraq. 1965. Statistical Data collection for 1965 Census, Table (2) Baghdad.
- 3- Republic of Iraq. 1978. Statistical Data collection for 1977 Census. Table (22), Baghdad.
- 4- Republic of Iraq. 1988. Statistical Data collection for 1987 Census. Table (22), Baghdad.
- 5- Ministry of planning. 2010. Directory of statistics- Erbil, statistical data summaries result for 2009 population survey, Erbil.

Kurds made up the highest proportion of the population in the region in 1957. However, the rate of annual population growth of the region, unlike that of the rest of Iraq, began to decline between 1965 and 1987, as shown in Table 1 and Figure 3. This could be attributed to inaccurate data from population censuses conducted in Iraq in one hand and the attempt made by those who carried out the census to minimize the size of Kurdish population deliberately in the other hand. As the Kurdistan region did not always experience political stability during this period, there was non-registration of the population in areas that fell outside the control of the central government. In addition, there was a displacement of large numbers of Kurds by the central government within the region and some of them to the central and southern regions of Iraq (Mohammed 1998).

After the failure of the September revolution in 1975, the al-Anfal campaign was launched by the central government against Kurdish villagers in 1988, which resulted in the loss of 182,000 lives. Although this affected the size of the population of the region, the annual growth rate of the region population increased subsequently, compared with that of the rest of Iraq in the years leading to 2009.

This was owing to the return of security and stability to the region after the Kurdish uprising of March 1991, which led to the liberation of most parts of the region and the return of large numbers of people from neighboring countries and other parts of Iraq.

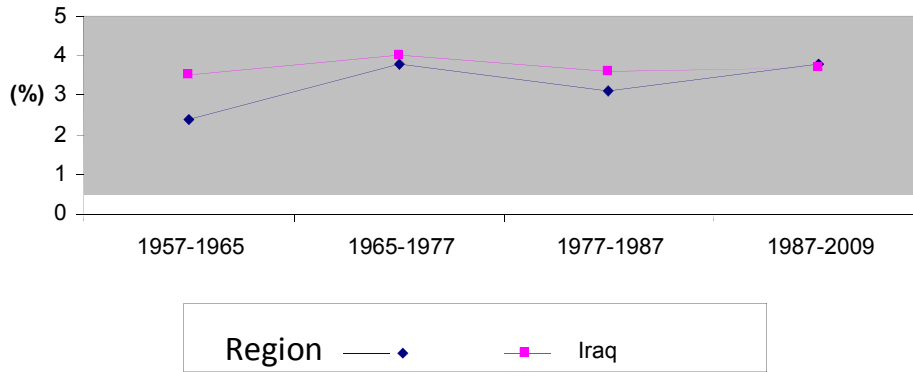
Table1. Number and proportion of Iraq and Kurdistan region population

(1957-2009)

| Census Years | Kurdistan region | Iraq | Percentage of the country total population |
|--------------|------------------|----------|--|
| 1957 | 1530043 | 6298976 | 24.2 |
| 1965 | 1830965 | 8097230 | 22.6 |
| 1977 | 2718830 | 12000497 | 22.7 |
| 1987 | 3607469 | 16335199 | 22 |
| 2009 | 7411020 | 31664466 | 23 |

- **Source:** Figure (2) references.

Figure3. Annual population growth for Kurdistan region and Iraq (1957-2009)



4. Regional population distribution

As it can be observed in Table 2, the population distribution witnessed considerable changes from one place to another and from one time to another in the same area. Even at the regional level, there was uneven distribution between districts and villages. The data from Table 2 further show significant variations in the distribution of the population of the territory at the subdivision administrative (provincial) level due to the location of each administrative unit in the region. Natural and human factors that lead to the congregation of people to certain areas also play a significant role in determining population growth.

Table 2. Percentage of population in the Kurdistan region at the governorate level

| years | Arbil | Sulaymaniy a | Ninewa - Dohuk | Kirkuk | Ninewa | Dyala |
|-------|-------|-----------------|----------------|--------|--------|-------|
| 1957 | 16 | 18 | 43 | 23 | NA | NA |
| 1977 | 20 | 25.5 | 9 | 21 | 16.5 | 8 |
| 1987 | 21 | 26.5 | 8 | 19 | 19 | 6 |
| 2009 | 21 | 24 | 14.5 | 20 | 15.5 | 5 |

NA- No data available

Source:

- 1- Republic of Iraq. (1961). Statistical Data collection for 1957 Census. Baghdad.
- 2- Republic of Iraq. (1978). Statistical Data collection for 1977 Census. Baghdad.
- 3- Republic of Iraq. (1988). Statistical Data collection for 1987 Census. Baghdad.
- 4- KRG. (2010). Kurdistan Statistical office. Statistical data result for 2009 population survey, Erbil.

The province of Ninewa-Dohuk recorded the highest population in 1957, accounting for as much as 43% of the total population. However, in 1987 it recorded an 8% decline due to the formation of the Province of Dohuk in 1969, which saw the annexation of the districts of Dohuk, Zakho, Amadiyah and Akre to the new Province. As for the Kirkuk governorate, the Kurdish population decreased from 23% in 1957 to 20% in 2009, as indicated in Figure 2 due to a number of significant administrative changes from 1976-2003. There was disengagement of each of the districts on the ridge, and part of the Klar district merged with the Sulaimaniya governorate. Kifri and a part of Kalar were subdivided and attached to Dyala governorate, just as Tuz had been subdivided for annexation to the Salahuddin governorate. There was rapid population growth in the period 1957-2009 in the Arbil , Sulaymaniyah, and Dohuk governorates. This was due to the policy by the central government to displace large numbers of the Kurdish population in the provinces characterized by diverse ethnic groups, such as Kirkuk, Ninewa, and Dyala to these governorates. Because of political instability, there was also migration of large numbers of Kurds from other central and southern governorates of Iraq after 2003 to the Kurdistan region.

5. Rural - Urban population distribution

The distinction between rural and urban population is normally made on the basis of different characteristics that distinguish urban areas from rural areas. There is no single definition which is applicable to all countries (Shryock *et al.* 1976). For the purpose of this study, the urbanization concept is defined as a process of population concentration based on five indicators, namely: administrative area, population size, local government area, urban characteristics, and predominant economic activities. In order to differentiate between urban and rural residents for the population census, the people were grouped into two categories i.e. rural and urban. Table 3 gives a summary of the population distribution by the category of residents for the 1957, 1987, and 2009 censuses.

Table3. Distribution of Population by type of Residence (Rural/Urban)

| Administrative units | 1957 | | 1987 | | 2009 | |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Urban (%) | Rural (%) | Urban (%) | Rural (%) | Urban (%) | Rural (%) |
| Arbil | 27 | 73 | 77 | 23 | 83 | 17 |
| Sulaymaniya | 26 | 74 | 71.5 | 28.5 | 85 | 15 |
| Kirkuk | 39 | 61 | 74 | 26 | 72 | 28 |
| Dohuk | 17 | 83 | 74.5 | 25.5 | 73 | 28 |
| Ninewa | 28 | 72 | 42 | 58 | 46 | 54 |
| Dyala | 32 | 68 | 53 | 47 | 55 | 45 |
| Kurdistan Region | 29 | 71 | 67 | 33 | 72 | 28 |
| Iraq | 39 | 61 | 70 | 30 | 69 | 31 |

Source:

- 1- Republic of Iraq. (1961). Statistical Data collection for 1957 Census. Table (8), Baghdad.
- 2- Republic of Iraq. (1988). Statistical Data collection for 1987 Census. Table (22) Baghdad.
- 3- Ministry of planning. 2010. Directory of statistics- Erbil, statistical data summaries result for 2009 population survey, Erbil.

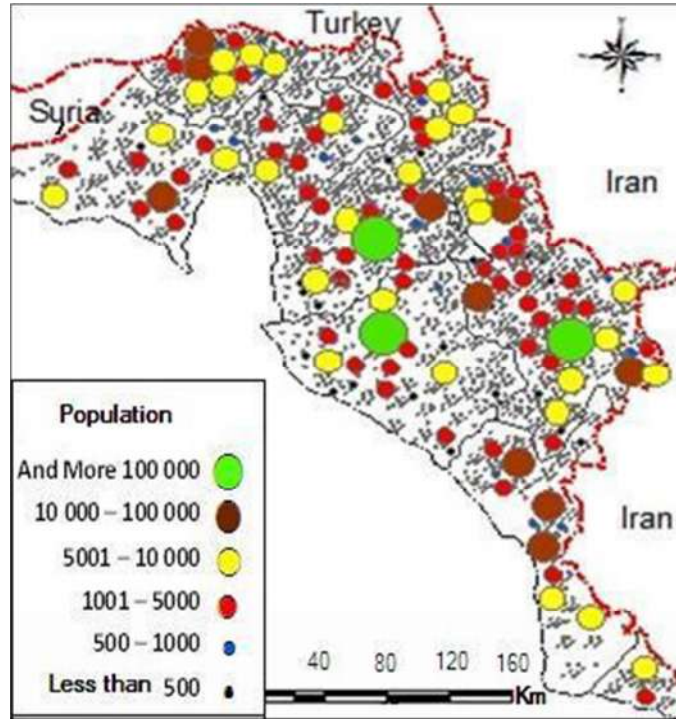
The distribution of population by rural and urban areas is of great significance in population studies. It mirrors the interaction of the elements of natural geography and human community, reflecting various aspects of the demography, society, and economy. It also shows the distribution of people and patterns of their settlements in the region. Different researchers and different countries differ in the development of principles and criteria for the classification of urban and rural population. It is necessary for administrative purposes to differentiate between urban and rural areas. In Iraq, residents who live within the borders of the administrative center in a district or province are categorized as the urban population, while the rest are classified as the rural population. In this study, such a criterion was used to classify the urban and rural population of the Kurdistan region.

From Table 3, it is clear that both urban and rural residential areas underwent major changes during the study period. At the regional level, the rural population in the 1957 accounted for more than 71% of the total population. However, this percentage decreased to not more than 28% in 2009. At the provincial level, there were clear variations in the proportion of urban and rural residents. Very slow growth in rural population was recorded in the provinces of Sulaimaniyah, Arbil, and Dohuk. In contrast, higher population growth was seen in Ninewa and Dyala. This could be attributed to the policy implemented by the central government, which followed the displace of rural population as part of central authorities discrimination policy and to congregate the largest proportion of Kurdish people in the urban areas, where they could be controlled by central government very easily. In contrast, to those people who dispersed in the rural settlements, where it would be difficult for the Baghdad authorities to control them for the security purposes. Considering that these villagers served as the backbone of the Kurdish revolution, it was thought that such a policy would lead to the weakening of the revolution.

6. Spatial distribution patterns of population in the Kurdistan region

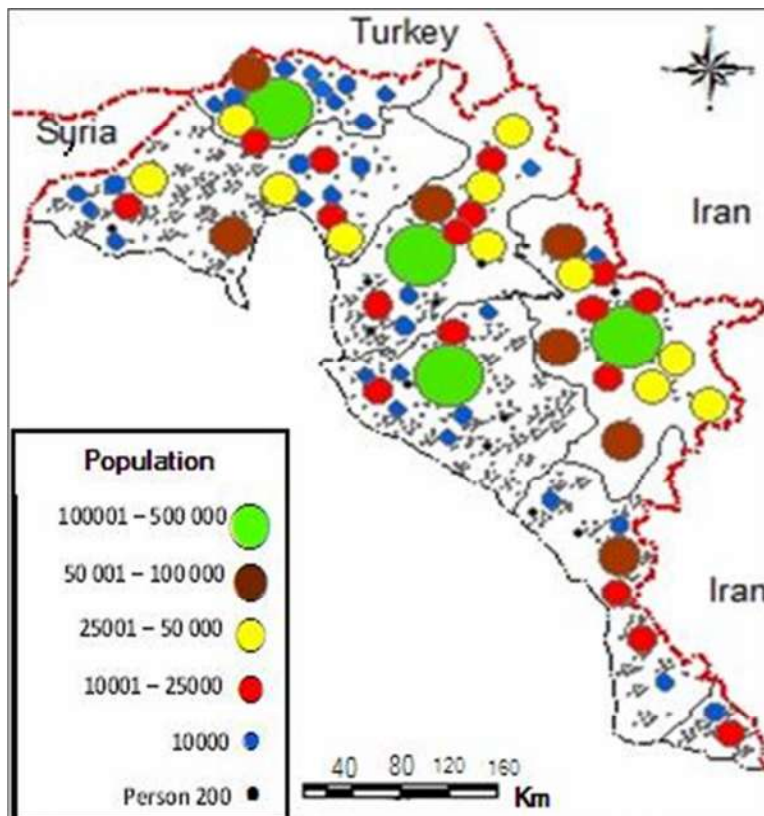
Figures 4 and 5, which show the population distribution in the Kurdistan region, indicate the existence of unevenness in the distribution of the population in the region, compared to other parts of Iraq. In general, the geographical distribution of population in the region tends to be dispersed over large areas, unlike that in the central and southern parts of Iraq, which are more linear as the settlements are along the rivers of the Tigris and Euphrates as a result of climate conditions and water resources. By comparing Figure 4 with Figure 5, one can see considerable variations in the distribution of settlements in the governorate of the Kurdistan region in 1977 and in 1988. The broad distribution of settlements in the region in 1977 took on a compact pattern due to the political conditions that affected the region. It can be concluded that the geographical distribution of population in the region is attributed to many physical and human factors. They act separately or in conjunction with one another in determining the pattern of population distribution. Trewartha's classification is used in this study to examine the factors that have an impact on population distribution as its application in elucidating the pattern of population distribution is widely acknowledged.

Figure4. Population distribution in 1977



Source: Done by researcher depending on Statistical Data collection for 1977 Census.

Figure5. Population distribution in 1987



Source: Done by researcher depending on Statistical Data collection for 1987 Census.

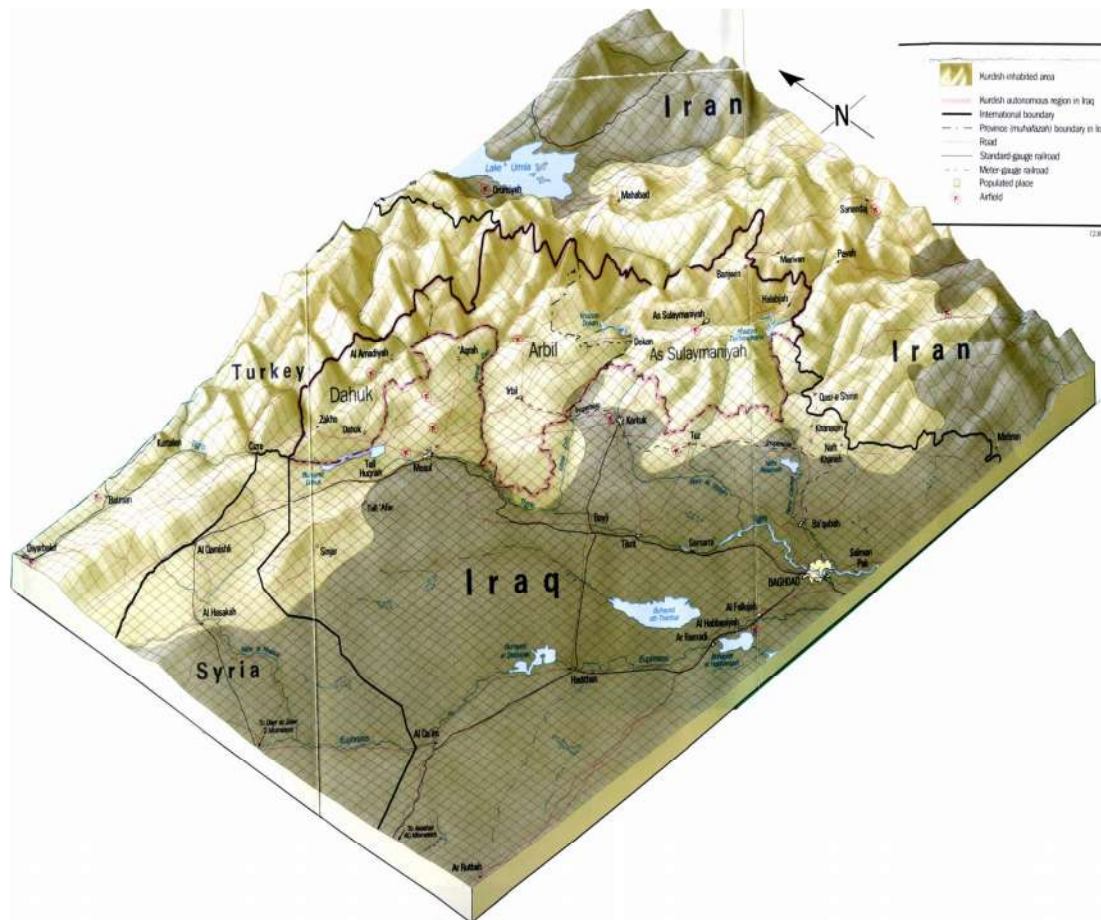
7. Factors influencing population distribution

7.1 Physical factors

7.1.1 Topography:

The Kurdistan territories cover by mountainous ranges, hills and plains. The lowest point in the region is Kifri, which has an elevation of 140 meters above sea level, and the highest point is the Peak of Hasarost Mountain in the Erbil governorate, measuring 3,607 meters above sea level (Naqshbandi *et al.*1998). The Kurdistan region extends mainly across the Zagros Mountain up to Taurus Mountains, as shown in Figure 6.

Figure6. Topography of the Kurdistan region



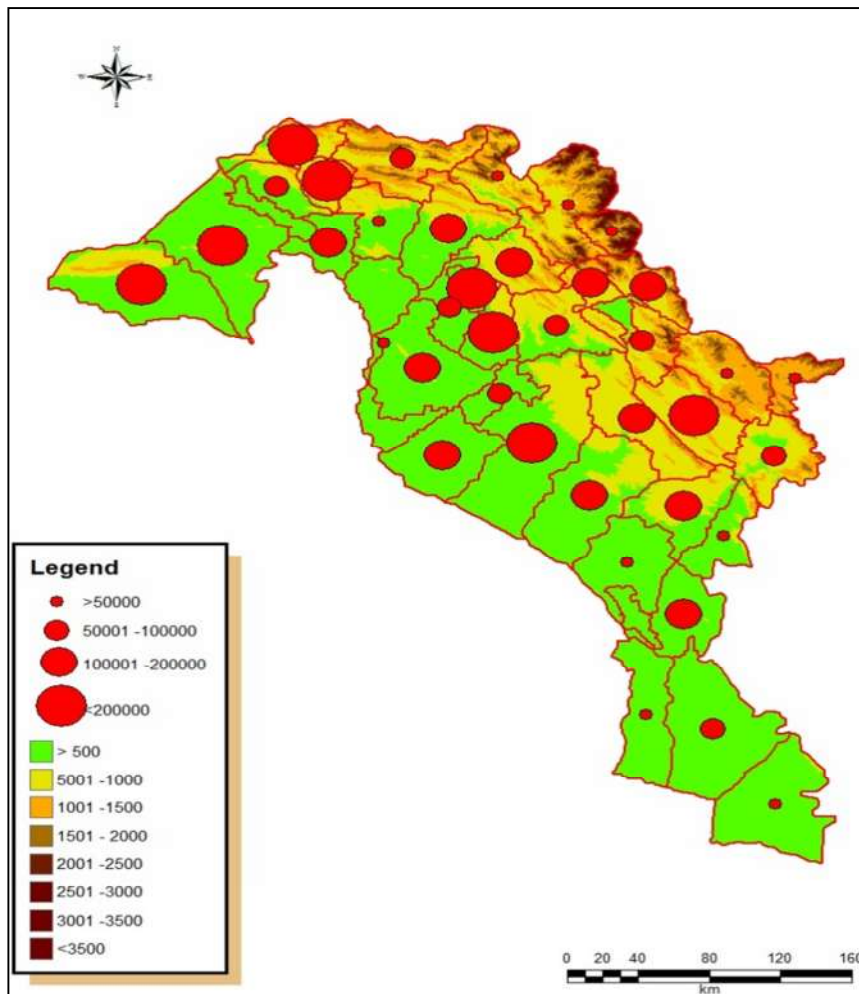
Source: <https://positivity.wordpress.com/2007/10/18/topographic-map-of-n-iraq-and-s-turkey/>

The northern and northeastern parts are characterized by the Iraqi Zagros Mountain range with heights up to 3,600m above sea level. This range separates the three Provinces of Northern Iraq from Turkey to the north and from Iran to the northeast. In this region, the terrain is rather rough, with steep slopes and narrow valleys. Snow coverage is common at high altitudes during the winter season and vegetation cover is widespread during the spring season, constituting of both grasses and forests (Travaglia & Dainelli 2003). A more even topography occurs in the central part of Kurdistan region. This region is characterized by an anticline/syncline system that gives rise to a relief in a generally north west to southeast orientation (Omar, 2005).

Here, heights of up to 2,000 meters above sea level are reached. Wider valleys occur in this zone, which is strongly affected by tectonic movements. Vegetation, comprising mainly herbs and shrubs, is rather sparse. The southwestern part is dominated by the low alluvial plains of the Tigris River and its tributaries. The average altitude of this part of the region is around 400 m above sea level.

When comparing the topography map of the region with the geographical distribution of population, as shown in Figure 7, one can see that areas which are lower (less than 1,000 m above sea level) support more than 67% of the total regional population because most large urban centers are located in these parts. In contrast, the rest of the population (33%) lives in mountainous areas and regions that are more than 1000 m above sea level (these percentages calculated by using Arc GIS tools).

Figure7. Topography effect on population distribution



Source: Done by researcher depending on statistical data summaries result for 2009 population survey,

7.1.2 Water Resources:

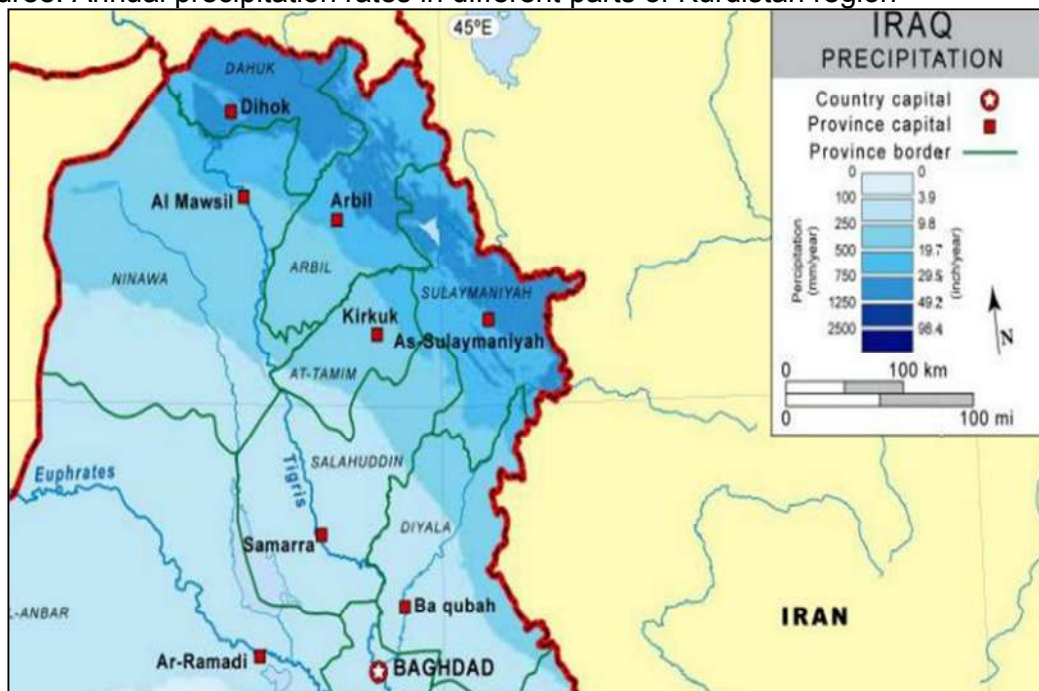
The Kurdistan region, being rich in water resources, is able to meet the needs of daily demands for water supplies and for irrigation purposes. Water resources are classified according to four categories, precipitation, surface water, groundwater, and treated wastewater (Heshmati 2009). Water resources play a prominent role in the spatial distribution of population in the Kurdistan region as clarified briefly below:

A - Precipitation:

Geographically, the Kurdistan region is located on longitude 42°15 E to 47°30 E and from latitude 35°25 N to 37°50 N. Its climate is generally characterized by cold and snowy winters and warm, dry summers. On the plains, typical semi-arid climatic conditions prevail (Nqshbandi et al. 1998). Precipitation occurs from October to May, decreasing from the north-east to south-west. Rainfall, the main climatic parameter, fluctuates considerably within short periods of time. The magnitude of rainfall ranges from 100 to 1,300 mm/year, with an annual average of about 469 mm/year (Hassan 2006). The direction of the wind is often from north to east. The summer wind brings with it drought and erosion. During summer, the atmosphere is dry and hot, but during winter, the climate is cold with snowfalls and frost (Ahmed 2001; Hassan 2006).

The amount of rainfall varies in different parts of the region, as well as from year to year, generally increasing towards the northern and northeastern regions, reflecting the influence of the terrain. The amount of rainfall ranges between 200-800 mm per year as shown in Figure 8, and by studying it together with a map showing the geographical distribution of population, one will see a close relationship between the two. The relatively high density of population in the provinces of Sulaimaniyah and Dohuk compared to other parts of the province is due to a number of factors, especially the annual rainfall. These two provinces in the region receive more rainfall (600 mm) annually while only small parts in other provinces receive such quantity of rainfall. The pattern of population distribution is clearly impacted by the amount of rainfall received annually.

Figure8. Annual precipitation rates in different parts of Kurdistan region



Source: <http://www.fao.org/ag/agp/AGPC/doc/Counprof/Iraq/Iraq.html>

B- Surface water:

Surface water in the Kurdistan region is represented by the Tigris River and its five tributaries (Khabur, Upper Zab, Lower Zab, Eozem, and Sirwan) as well as the lakes as shown in Figure 9. A large amount of the surface water has its origins outside the borders of the Kurdistan region. The tributaries of the Tigris River converge at an angle that is close to a right angle, discharging water into the Tigris River, which is deeper than its tributary streams.

There are many ways of resourcing and storing water but it is important to have a continuous water supply. Thus, the effect of surface water on population distribution within the Kurdistan region must be examined against the condition of the harsh topography of the river basin, which makes it difficult for people to access it. Surface water does not generally affect the distribution of the people in the Kurdistan region because the deep valleys through which the rivers run make it difficult to draw water for agricultural use without appropriate irrigation projects. Therefore, local inhabitants rely more on groundwater.

C - Groundwater:

Groundwater in the Kurdistan region plays a significant role in determining population distribution because almost all the settlements and villages here depend on it especially in the summer for domestic and agricultural use. In historical times, the distribution of groundwater played an important role in the establishment of villages. Wherever there was a spring, a small settlement would be built up around it. Many villages are named after the neighborhood springs e.g. Kani Bardina, Saro kani, Kani tawq, Kani Ghazal, etc.

The Kurdistan region has an abundance of springs located at the foothills of mountains, in the plains, valleys, and on hill slopes. The distribution of springs in this region depends on a combination of factors, including the amount of rainfall, the porosity of rocks as well as the topography. Together with the geological structure of the area, there are three types of springs based on the terrain:

1 - Springs of the mountainous region:

The high rate of rainfall in the mountainous region, the stability of layered porosity in the rock layers, as well as numerous cracks and faults in the rocks contribute to the abundance of springs in this region. These springs are characterized by the high quality of its water, where the proportion of salt is 240-350 ppm (Kadir 2012).

2- Springs of the semi–mountainous region:

This region has the advantage of layers of rock of appropriate porosity. Because of the sand, gravel, and silt covering large parts of the surface area, in addition to the existence of configurations karst limestone and dolomite, the springs in the semi-mountainous region are relatively less abundant and the quality of the water is not as high as the water from the mountain springs. Generally, the importance of groundwater in springs, wells, and kariz increases in the semi-mountainous region where rainfall is light. Groundwater is used widely by households and for watering summer crops. Major urban centers in regions like Arbil and Kirkuk, where more than 24% of the inhabitants of the region are found depend entirely on groundwater to meet their needs.

3- Kahrez:

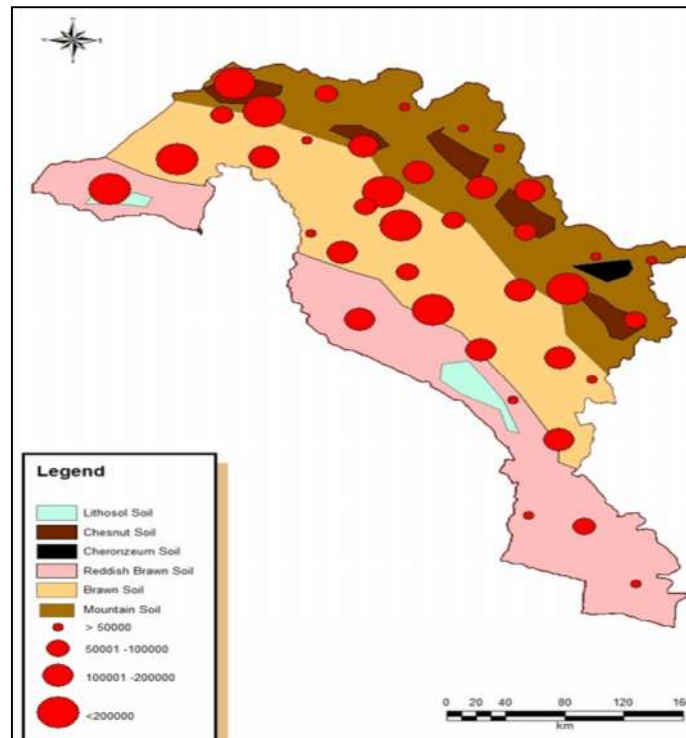
There is another type of ground water called “Kahrez” -also known as qanats, aflaj, foggara, khettara and other names in other places- are engineered to collect groundwater and direct it, through a subsurface tunnel with a gradual slope, to surface canals that provide water to settlements and agricultural fields. With 380 karez still active in Kurdistan region as recently as 2004, and 116 of these still being used in summer 2009 (UNESCO 2009).

7.1.3 Soil:

The quality of the soil is yet another geographic determinant of population distribution. In general, there are two kinds of soil, the superficial matter, which covers the solid rock below and is usually poor in quality, and the rich residual soil, which is transported from other locations by water, ice or wind (Qahraman 1998). Studying Figure 9, which shows the distribution of soils in the region (soil type and area are calculated depending on (Buringh 1957; Buringh 1960)) together with the population distribution, one can see that the regions where brown soil covers 36% of the area are where more than 62% of the total population is found. Brown soil is suitable for crop cultivation, especially wheat and barley.

On the other hand, in areas where red brown soil covers 33.5% of the total area of the Kurdistan, only 9% of the total population is found there. Mountain soil, which ranks third, covers 26% of the total area of the region and 13.5% of the total population, is found in such areas. Chestnut, Lithosol, and Chernozem soils come after that, each covering 2.5, 1.9, and less than 1 percent of the total area of the region respectively. In these areas are also found 13.5, 1 and 1.5 percent of the total regional population respectively (these percentages calculated by using Arc GIS tools).

Figure9. Effect of soil on population distribution in Kurdistan region



Source: Done by researcher depending on statistical data summaries result for 2009 population survey

7.2 Human factors

Besides natural factors, human factors in particular political factors also play a significant role in determining the pattern of population distribution in the Kurdistan region. In the aftermath of World War I, the British government annexed Mosul state, a Kurd majority area, a part of Iraq (Carl 2002). The Kurds felt great injustice had been meted out to them as this annexation was against their wishes. Despite various covenants and international agreements, the Kurds felt that successive governments in Iraq did not treat them fairly in terms of citizenship and did not give due recognition to the Kurdish culture. As a result, there were numerous armed revolutions and uprisings throughout the eight decades of Iraqi rule (Stansfield 2003).

The Iraqi government responded with an iron hand, using various means to implement deportation and Arabization of the Kurds. At the beginning of the monarchy in Iraq, large military, political campaigns were carried out in the region which led to the displacement of many residents of villages and towns, especially those along the border or those which lay on strategic axes to urban centers (such as Erbil, Mosul, Kirkuk, and Sulaymaniyah). Interestingly, the process of displacement started expanding in the 1960s, and later with the outbreak of the Iraq – Iran war in the eighties (1980 -1988), the process took a broader dimension, leading to the destruction of thousands of villages and towns, forcing the people to resettle near main roads and large urban centers (Jaza 1999). There are four phases of the displacement of residents in the region:

-The first phase (1963 -1974):

During this period, the displacement of villagers began in the southern provinces of Kurdistan, especially those in the Garmian area (*Garmian* means the land of hot places) in Kifri, Qaratepe, Daquq, Dobz, Mandali, Khanaqin, Sinjar, and Tal Afar. It should be noted that all these areas are currently located within the areas where political boundaries are in dispute.

-The second phase (1974 -1980):

During this period, the Iraqi authorities built a large number of settlements for those who returned after the setback of the September Kurdish revolution (1976-1978). These settlements were often in remote areas as the Iraqi authorities had destroyed border villages.

-The third phase (1980-1988):

In the 1980s, the Iraqi authorities destroyed most of the villages and towns and forced their people to resettle in the newly build settlements in selected specific areas. A number of urban centers (such as Halabja, Qala Dizareh, Penguin, Chuman, Haji Omran) were destroyed. According to a study by Shores Resool, 3,641 villages were destroyed in this period, and more than 1,161 million people were resettled (Resool 1990). As shown in Map 11, in 1988, all the inhabitants of the provinces of Sulaymaniyah, Dohuk, and Erbil, and part of the province of Kirkuk were resettled on an area of not more than 6% of the total area of the regional urban centers. Hence, about 94% of urban residents in that year were found in these areas; villages were located only near large cities and along on main roads (Mohammed 1998).

-The fourth phase (1991-2003):

This phase occurred after the uprising of March 1991 and after the United Nations Security Council Resolution 688, on the basis of which a no-fly zone was established north of the 36° latitude, Figure 10. The Kurds took advantage of the UN resolution to liberate the affected provinces Erbil, Sulaymaniyah, and Dohuk (Stansfield 2003).

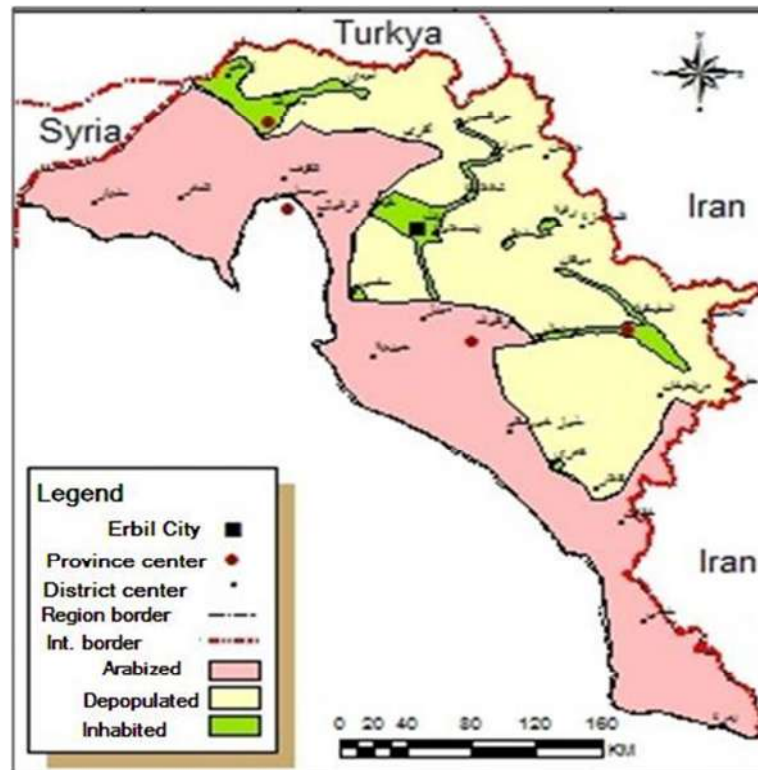
Figure10. No-Fly Zone in Iraq



Source: U.S. Air Force http://www.af.mil/photos/art_maps.shtml

Nevertheless, other areas of the province located outside this region were considered conflicted zones. Until the fall of the regime in 2003, there was a continuation of the campaign to displace Kurds to the liberated areas. In the process, Kurdish housing in Fayda, Maxmor, Kndinawa, Qaraj, Gwyr, and Altonkopre were delivered to Arab inhabitants and tribes from central and southern Iraq as a part of Arabization process.

Figure11. Arabized, depopulated and inhabited areas in Kurdistan



It should be pointed out that this policy by the central government throughout the period had a negative impact on the distribution of the population in the Kurdistan region. Therefore, the regional government of Kurdistan in recent times had ordered a re-distribution of the population of the region by providing various facilities to encourage residents of villages and rural areas to return to their original homeland. However, such a move has not achieved much success as the Kurdish population constituted only 28% of the population in this region in 2009.

From the above discussion, we can conclude that the policy of Arabization and displacement by successive governments in Iraq during the last 80 years has had a negative impact on the pattern of population distribution in the province. At times, when the region was relatively stable, as was the case in 1957 when the distribution of the population was not controlled, about 75% of the total population of the Kurdistan region lived in villages. However, in the 1980s, with military operations launched against the Kurds by the central government, not only did Kurdish society and the economy suffer, but the people of Iraq as a whole were adversely affected. For a long time, this region had been the breadbasket for the country, producing food especially the wheat, barley and other cereal production to meet the needs of the locals. At present, it has become an area of net consumers, and most of the basic foodstuffs have to be brought in from outside the region. Overcrowded large urban centers are hampering urban planners' efforts to optimize resources for the provision of community services in this densely populated region.

8. Conclusion

Demographic factors play an important role in the development of human resources because of their interrelationships with employment, education, skill and capability development, health and nutrition. As people are the most important and valuable resource in any nation possesses, it is important that the government ensure that all its citizens are given the opportunity to use the potential abilities in their daily life. Such a policy, which is embraced by various developed and developing countries, will result in the enhancement of social and economic development of the community as a whole.

In this paper, a set of methods has been used to achieve the goals of this work. This includes the regional, systematic, and descriptive Approaches, to investigate the population change and distribution processes. Specifically, the analysis focused on the Kurdistan region in Iraq from 1957–2009. It was observed that the national population grew from 1.5 million in 1957 to 1.8 million in 1965, 2.7 million in 1977, 3.6 million in 1987, and 7.4 million in 2009. However, the increasing trend in the past does not mean that there is high population growth at present. Between 1957 and 2009, population growth changed significantly in the Kurdistan region. Data from censuses indicated that the highest proportion of Kurds in the population of the region was recorded in 1957 (as 1957 census is the only reliable and trusted, to some extent, for ethnic structure of Iraq). This figure began to decline from 1965-1987, thus affecting the rate of annual population growth of the region compared to Iraq as a whole. Differential rates of growth between regions are basically the result of differences in the rate of reproduction, internal migration, and degree of urbanization. To some extent, the physical, topographic features and climatic conditions of the regions also determine the concentration and distribution of the population. There was uneven distribution of population between the different parts of the province and districts. The province of Ninewa-dohuk recorded a Kurdish representation of 43 % in the population in 1957. However, this percentage declined to not more than 8% by 1987. The formation of the governorate of Dohuk in 1969 saw the districts of Dohuk and Zakho and Amadiyah Akre annexed to the new

governorate. Subsequently, the population composition of Kurds in the Kirkuk governorate declined from 23% in 1957 to 20% in 2009. In contrast, there was rapid population growth from 1957-2009 in the governorates of Arbil, Sulaymaniyah, and Dohuk. With regard to rural-urban population distribution, the urban population in the Kurdistan region has been expanding rapidly. For instance, the proportion of urban and rural residents saw considerable changes during the study period. In 1957, rural folk accounted for more than 71% of the regional population but this percentage decreased to not more than 28% by 2009. In contrast, the urban population rose from 29% of the total regional population in 1957 to 72% in 2009.

Because of the uneven population distribution, there is also a marked variation in the geographical distribution pattern of population in the Kurdistan region. The population used to be dispersed, unlike in the central and southern regions in Iraq where the distribution was linear as people settled along the banks of the Tigris and Euphrates. In 1977, settlements were spread out in most parts of the Kurdistan region of Iraq, but by 1988, the distribution took on a more compact pattern because of political upheavals that the region was undergoing then. It can be concluded that the geographical distribution of population in the region is linked to many factors that act separately or in unison to determine the pattern of this distribution. The population map of the Kurdistan region, shows that the population is distributed very unevenly. This unequal distribution is the result of factors, including soil and other physical features of the region. Moreover, physical and human factors are often interrelated since the rural economy is intimately connected with agriculture. In rocky rough mountainous area and hilly regions, continuous cultivation in the same place is not always possible and consequently the population density is very low. On the other hand, the deep fertile brown soils of the Kurdistan in the plains, fan plains and riverbanks area support a high density of rural population (Layla, 1998). Besides fertile soil, availability of water is also important to sustain an agrarian community. In addition, there are human and political factors to contend with. As Vidal de la Blache points out, "the distribution of population in any region is not to be explained by advantages of location".

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پوخته

یه کێک له گرنگترین ئه و بابه تانه ی که بوته جیگای بایه خ پیدانی جوگرافیای دانیشتون لیکۆلینه وه کانی په یوه سته به دابه شبوونی دانیشتون، که تیا یاندا راده ی بلا و بوونه وه ی شوینی دابه شبوونی دانیشتون دهرده خن، دهرئه نجامی ئه م جوړه لیکۆلینه وانه و راستو دروستیشیان تاراده یه کی زۆر په یوه ستنه به و داتا دیموگرافیانه ی که له بهر دهستان. له م لیکۆلینه وه دا پشت به شیکردنه وه ی شوینی به ستراوه له کرداره کانی دابه شبوون و ئه و گۆرانانه ی که به سهر دانیشتوندا هاتوو له سهر ئاستی یه که کارگیریه کانی ههریمی کوردستانی عیراق له ماوه ی نیوان سالانی (1957-2009). سه باره ت به گرنگی لیکۆلینه وه که ش له وه وه سه رچاوه ده گریت که ئاماژه به دابه شبوونی دانیشتون له ههریمه که وه ک گرفتیک کراوه له گه ل پیشاندانی جیاوازییه کان له نیو به شه کانیدا، ئه مه ویرای ئه وه ی که شیکردنه وه بو گرنگترین ئه و فاکته رانه کراوه که کاریگه ریان له سهر بوونی جیاوازییه کان هه بووه. پالپشت به هه موو ئه مانه ش لیکۆلینه وه که به سهر چند ته وه ره یه ک دابه شکراوه، که سهره تا به پیشه کیه کی گشتی دهستی پیکردوو، و دواتر شیکردنه وه ی پیویست بو ئه و گۆرانانه ی که به سهر گه شه و دابه شبوونی دانیشتون وه کاره کانی کاریگه ریان له سهر بوونی ئه م گۆرانانه هه بووه له ناوچه ی لیکۆلینه وه کراوه، له کۆتاییدا لیکۆلینه وه که به چند دهرئه نجامیک گه یشتوو که ده گریت له به رچا و بگیرین له کاتی دانانی ههر پلانیک که به مه به سستی گه شه پیدانی ههریمه که داهه رپریت، له گه ل هه و لدان بو چاره سه رکردنی ئه و ناهاوسه نگیه ی که له دابه شبوونی دانیشتونه که یدا هه یه له کاتی ئیستادا .

المخلص

تعدالدراسات المتعلقة بالتوزيع السكاني والذي يبين مدى الانتشار المكاني للسكان في منطقة معينة، من الموضوعات المهمة و الجوهرية في جغرافية السكان، لأن الحقائق المستنتجة في هذا المجال و المتعلقة بأية منطقة أو إقليم تكون أصوب و أدق اذا ما توفرت لها المعلومات والبيانات الديموغرافية الموثوقة والتي يمكن الاعتماد عليها. يعتمد هذا البحث على نهج التحليل المكاني للتحقيق في عمليات توزيع وتغيير السكان على مستوى الوحدات الادارية الرئيسية في كوردستان العراق للاعوام 1957-2009. و تتجلى أهمية هذه الدراسة في إشارتها الى أن توزيع السكان في هذا الأقليم مشكلة بحد ذاتها، مع التباين والاختلاف في هذا التوزيع، بغية تحديد العوامل الجغرافية المؤثرة في هذا المجال. و بناء على ذلك و زع البحث على عدة محاور، يبداء بمدخل عام ويليه شرح عن الطريقة المتبعة للتحليل في منطقة الدراسة، نمو وتغيير حجم السكان في المنطقة، التوزيع الجغرافي للسكان و العوامل الجغرافية المؤثرة في توزيع السكان في المنطقة. وقد توصل البحث في نهاية المطاف إلى جملة استنتاجات بهدف تطوير المنطقة و تقديمها و معالجة عدم التوازن الموجود في توزيع سكانها .