

Settlement Size and its Effect on Sustainable Rural Development: A Case Study of Erbil, Kurdistan Region/Iraq

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Abstract

Regional distribution of rural population in a specific area or region has a direct influence on its progress and prosperity. The spread of people by size group and dispersion over a country's land mass also has an impact on its socioeconomic progress, prosperity and the availability and quality of infrastructural facilities. Village size varies considerably in the Kurdistan region, with some villages having less than 50 residents and some having more than 1000 residents. The study first observes the size category of villages in Erbil state using census data. It then establishes linkages between the size of villages and their accessibility to basic amenities. Small villages have grown in number and there is a decline in the number of large villages in the state. Residents of large villages are socioeconomically better developed compared to residents of smaller villages, and they have better access to basic services.

Keywords: village size; amenities; sustainable development; Kurdistan /Iraq

1. Introduction

The influence of population on both the natural resources and environments make it important to examine the trends in population distribution in any area (Gallup *et. al*, 1999). This is particularly important in the planning and implementation of rural development programs in the region. These arguments suggest that no assessment of resource potentials and prospects for sustainable development can be completed without proper understanding of the aerial distribution and concentration of the population. Population distribution refers to the proportional distribution of the population over the available land area. It gives a reflection of the burden to the land resources public services available in an area. Population distribution also reflects the environmental implications of population to specific areas (Cohen, 1997).

Population distribution also shows the size of the population or in other words, the concentration of people living in a certain area. Population size is commonly used to refer to the number of people in particular land area. Population size gives the general number of people who occupy certain piece of land; it shows the concentration of the population over a land area (Haupt, 2000). Though population size 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 location of settlements. Similarly, certain human activities are selective in nature in terms of location and suitability.

Analysis of population distribution by size requires periodic and systematic information on population size and its spatial distribution over time. However, this work is not easy to achieve due to requirement of reliable data other from the census data. 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 rural population size, an attempt has been made in this paper to investigate the regional and local data in time series. The purpose of this paper, therefore, is to discuss the population size distribution in the Ebil rural area as observed in Population Census. In the course of discussion, an attempt has been made to show the implications of the observed population distribution and size features. The data used in this paper were obtained from the 1977, 1987 and 2005 Population survey. Additional data were obtained from the secondary source for analysis purposes.

2. Sustainable Rural Development

Rural development is a strategy designed to improve the social and economic status of people living in the rural areas (Rivera, 1980). After three decades in rural development work, this simple definition is still the most common and acceptable definition as it mentions two important keywords—social and economic. Consequently, the sustainability of rural communities has become an imperative social policy issue in current years (Champion 2007; Best and Shucksmith 2006). Those concerned with economic development in urban areas welcome signs of ‘urban revival’ as young populations are attracted to urban centres. In rural areas, however, out-migration of young adults remains a dominant force, raising questions about the future viability of some rural communities (ARHC 2006). Sustainable development refers to use of natural resources that aims at satisfying human needs, while safeguarding the environment, in order to create a developmental plan that aims at meeting not only the requirements of the present generation but also that of the future generations.

The term sustainable development was first coined by the Brundtland Commission, which defined the word as “which implies meeting the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). Sustainability and sustainable development are multidimensional in nature, and aim at serving various purposes with different scopes (Hardi and Zdan, 1997). Sustainable development could be achieved by using various processes of environmental conservation, and expanding the creation of different social and technological innovative techniques that aim at environmental protection (Winograd, 1995). Sustainable development links the concerns that arise out of bearing the total capacity of the natural resources along with social pressures. In 1970, we find that the term "sustainability" was used to characterize an economy that was "in equilibrium with basic ecological support systems" (Stivers, 1976).

Sustainable development can be divided into three basic parts:

environmental protection, social sustainability, and economic progress.

Sustainable development is a quantitative variable and can be measured through observations on how well a community is adhering to the needs and conjectures of the present and future citizens. There are various indicators to measure the SD within a community.

3. Population Distribution and Sustainable Development

The population distribution in a particular area or region has a direct influence on its progress and prosperity. The spread of people by age group and dispersion over a country’s land mass also has an impact on its socioeconomic progress, prosperity and the availability and quality of infrastructural facilities. It also has important implications for employment, law and order, and political representation. The relationships between population and sustainability are easier to visualize at the macro level. Perhaps the most obvious and traditional link that can be established is the recognition that, in the long run, environmental sustainability cannot be achieved without stabilizing population. The well-established link between population and community development has been subjected to different kinds of interpretations by different authors. According to the Malthusian theory, the population growth of any country or community can lead to fewer of resources, economic degradation, and a decline in wealth causing widespread poverty (Malthus, 1998).

However, those who contest this theory state that population growth is a condition that can be used favorably by educated classes to create new technologies and increase the production which eventually leads to economic freedom and subsequent development (Simon, 1998). Though the two theories are in opposition, when considered together, they reflect the importance of links between different scope modifiers like various institutional variables and the economies prevalent in the community and the rate of population growth. Thus, there are no doubts that population size has a significant influence over the sustainability of any community. For example:

1. Living closer together encourages more community interaction, and reduces isolation for vulnerable social groups, such as young families;
2. Compact settlements require less transport and reduce car use, which has health and environmental benefits;
3. In rural areas, more compact villages help to stem the decline in rural services, such as schools, shops, post offices and bus services.

In developing countries, extremely high rural population sizes are a recurrent worry in terms of overpopulation and population pressures on the carrying capacity of the environment. But when population size gets too low, it also has unpleasant consequences in rural areas. Farm amalgamations not only decrease rural numbers, but they also enlarge the space between households, the ratio of clustered to disperse populations, and the distance inputs per capita required to provide the remaining households with services, social functions and human companionship.

For several services, as population size falls not only does the local population fall below a demand threshold, but it also becomes impossible to compensate for this by amalgamating local government areas to achieve an arbitrary population target. In effect, it becomes impractical to maintain sufficient demand within a rational travel distance to run the services at a minimum level. Aasbrenn (1998) pointed out that the problems of sparsification breaks down into a distance problem and a scale problem: the extra cost in time, money and convenience of overcoming distance as the settlement pattern thins out, and the reduced opportunities for remaining services to obtain scale economies.

These factors listed by Aasbrenn (1998, p. 73) lead to the following negative features; intensified ageing, deterioration of social networks, changes in demand (for services), the marginalized viability of service suppliers and decay of physical infrastructure. Together these form a condition often seen in areas of falling population to create a self-reinforcing cycle of decline that gives, rise to low morale and a dispirited residual population (Smailes, 1996). The significant influence wielded by population on the natural resources, and socio-economic characteristics of a community, makes it necessary to study the direction of population size distribution in order to plan and implement programs associated with growth and development in a region.

4. Data and Method

Erbil state has been selected for analysis in the present paper. Which is one of the Iraqi Kurdistan's region governorate, located in the Northeastern part of Iraq and it is divided into nine districts namely; Hawler centre, Makhmwr, Shaqlawa, Koya, Soran, Mergasor, chwman, Dashti hawler and Khabat. Shares borders with Turkey and Iran to the north, Suleimaniah state to the east, Mosul and Dohuk state to the west and Kirkuk state to the south, Figure1. Erbil has a total land area of 14817 square kilometers covering about 3.4% of the Iraq total land area (KROS, 2007).

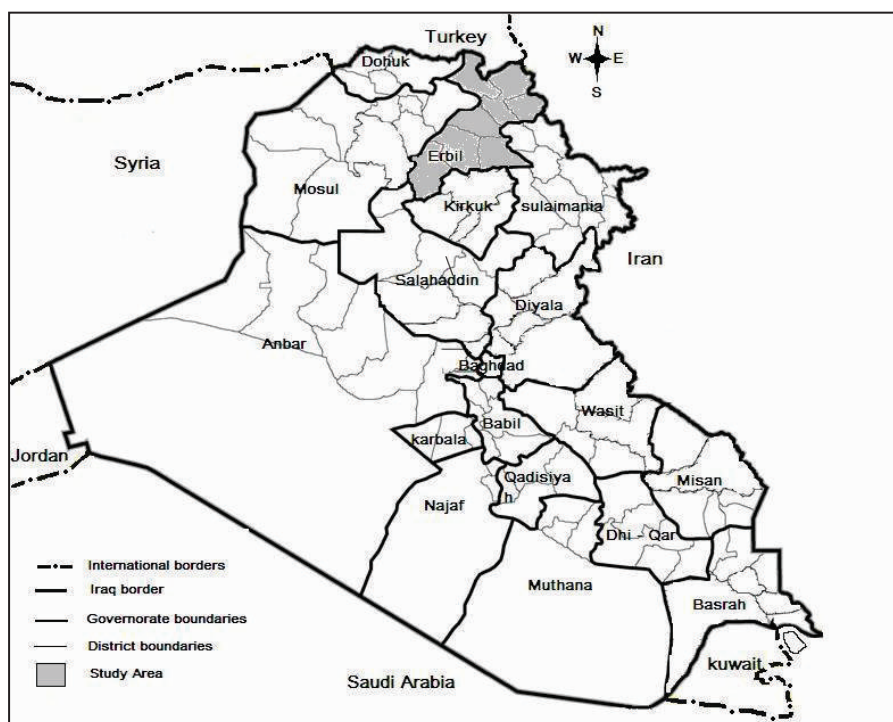


Figure1. Erbil Location

The selection of Erbil state has been done in a manner to get maximum representation of their socioeconomic differentials. The nine districts cover the wide range of socioeconomic differentials that exist in the region. The data for the present analysis has been taken from three different sources, namely Census of Iraq (1977, 1987) and 2005 trial census data for the Erbil state population as well as Erbil village survey data for 2005. The information on number of villages and their population has been obtained from the 1977, 1987 and 2005 censuses.

The villages have been classified into four categories based on the size of their population. The four categories are: (1) hamlet (having a population of less than 200); (2) small (having a population between 200_500); (3) medium (having a population between 501-1000) and (4) large having a population more than 1000). Although the size categories are chosen arbitrarily, the average size of villages in the states and their variations has been taken into account. It is thought that a village with more than 1000 persons can be regarded as large enough so that it would be cost-effective to have different facilities such as accessibility via all-weather roads, schools, health centers, etc. Though ideally every village should have these and other facilities, considering the resource constraints it makes sense to have such facilities in a manner that allows them to serve more people.

5. Distribution of Rural Settlement by Population Size

The basic decisive factor for the size typology of the rural settlements is the number of population. Population size is often used as a characterizing feature of rural communities in developed countries, while in developing countries; population size sometimes has very little relationship to services, infrastructure, and degree of development or lifestyle (Couper 2003).

5.1 Distribution of Settlements by their Size at governorate Level

There are all the sizes of the village in Kurdistan Region, ranging from those with several tens of people to those with several thousand inhabitants. The situation is similar when it comes to the rural settlements in the Erbil state as shown in Table 1.

As the three censuses indicate, over the decade, settlements with less than 200 person group represent the wide-ranging of the settlements in the area. For instance the percentage of settlement for this group accounted 63, 46.6 and 54.8 % in all censuses. At the same time, it can be observed that there has been a decline in the number of small villages, the uptick in growth can be attributed to the fact that from the late 1960s to the end of 1980s there was considerable tension between the Kurds fighter and Iraqi government. Instead of peace, the decade ended with building of collective towns to house the rural population that the Iraqi army was displacing. And that's why the number of villages declined sharply from 1045 to only 277, and percentage of settlement with more than 1000 person in 1987 increased to 11.9% while population percentage hit the highest point of 57.3 % after it was only 11.3% in 1977. However, the declines in small size settlements do not mean that their portion dropped in total, that's why if we look at 2005 situation; we can see clearly the increasing of percentage of this group again to reach 54.9% of the total settlement. The political independent of the region after 1990s encouraged the villagers to return to their hometown and that's why the growth ratio recorded positive increase.

Table 1. Distribution of Villages by Size in Erbil State
(1977 – 2005)

| Size group | 1977 | | 1987 | | 2005 | |
|-----------------|--------|------|--------|------|--------|------|
| | Settl. | Pop. | Settl. | Pop. | Settl. | Pop. |
| < 200 | 63 | 25.4 | 46.6 | 9.4 | 54.8 | 14.7 |
| 200-500 | 28 | 41.1 | 29.6 | 17.7 | 28.8 | 26.3 |
| 501-1000 | 7.2 | 22.2 | 11.9 | 15.6 | 10.9 | 21.2 |
| >1000 | 1.8 | 11.3 | 11.9 | 57.3 | 5.5 | 37.8 |
| No. of Villages | 1045 | | 277 | | 1068 | |

Source:

- 2- Republic of Iraq. (1978). Statistical Data collection for 1977 Census. Erbil Governorate. Baghdad. Tables No. (9-10-11)
- 3- Republic of Iraq. (1988). Statistical Data collection for 1987 Census. Erbil Governorate. Baghdad. Tables No. (29-30)
- 4- KRG. (2005). Kurdistan Statistical office. Statistical data result for 2005 population survey (unpublished data).

5.2 Distribution of Settlements by their Size at District Level

As shown in Table 2, over the decade, there has been an increase in the number of large villages (more than 1000) in eight of nine districts in Erbil state. In Hawler centre, Shaqlawa, Koya and Soran districts, villages with more than 1000 population increased noticeably more than others. At the same time, there has been a tiny decline in the number of small villages. The increase in the number of large villages and the reduction in the number of small villages in all the districts appear encouraging in terms of making villages self sufficient by equipping them with basic facilities. However, the fact remains that smaller villages still stay in the majority in all the states except Hawler centre. As the case of Erbil State, settlement size patterns also vary between the districts depending on physical and human aspect. According to table 2 the settlement size can be divided into four main categories in Erbil;

5.2.1 Settlement size less than 200

This group represents the wide-ranging of the settlements in the area. For instance the percentage of settlement in 2005 for this group counted 61.5, 63.7, 68.1, 50.5, 54.3 and 63.7 % for each of Makhmur, Koya, Soran, Mergasor, Chwman and Dashti Hawler districts respectively.

5.2.2 Settlement size ranged 200- 500

In most of the districts this group occupied a noticeable percentage of total village size in the study area. For instance the percentage of settlement in 2005 for this group counted 40.9, 27.4, 32, 34.8, and 27.5 % for each of Shaqlawa, Koya, Mergasor, Chwman and Dashti Hawler districts respectively.

5.2.3 Settlement size ranged 501-1000

Only in Hawler and Khabat districts this group occupied a noticeable percentage of total village size in the study area. The percentage of the settlement in 2005 for this group accounted the highest among Erbil state by 35.7 and 24.5 % for each of Hawler and Khabat respectively. For other districts like shaqlawa, Soran, Mergasor and Chwman the percentage of settlement with this range counted 11.9, 8.2, 14.6 and 9.8 % respectively.

5.2.4 Settlement size more than 1000

A higher percentage of this group can be found only in Hawler and Khabat districts. For instance the percentages of settlement in 2005 for the two districts counted 17.9% and 14.9% of their total rural settlements respectively. This is a high ratio when it compared to other districts for the same group size.

Table 2. Distribution of Villages by Size at District Level (1977 - 2005)

| Districts | Size group | 1977 | | 1987 | | 2005 | |
|----------------|------------|--------------|--|--------------|--|--------------|--|
| | | Settlement % | | Settlement % | | Settlement % | |
| Hawler centre | <200 | 49.3 | | 32.5 | | 25 | |
| | 200-500 | 37 | | 27.7 | | 21.4 | |
| | 501-1000 | 10.5 | | 16.9 | | 35.7 | |
| | >1000 | 3.2 | | 22.9 | | 17.9 | |
| Makhmwr | <200 | 59 | | 54.1 | | 61.5 | |
| | 200-500 | 28.8 | | 24.6 | | 24.4 | |
| | 501-1000 | 9.3 | | 13.1 | | 3.7 | |
| | >1000 | 2.9 | | 8.2 | | 10.4 | |
| Shaqlawa | <200 | 66.3 | | 47 | | 42.8 | |
| | 200-500 | 26.8 | | 40.9 | | 40.9 | |
| | 501-1000 | 5.8 | | 6.1 | | 11.9 | |
| | >1000 | 1.1 | | 6 | | 4.4 | |
| Koya | <200 | 55.5 | | - | | 63.7 | |
| | 200-500 | 37.5 | | - | | 27.4 | |
| | 501-1000 | 6.3 | | - | | 7.4 | |
| | >1000 | 0.7 | | - | | 1.5 | |
| Soran | <200 | 80.6 | | 56.7 | | 68.1 | |
| | 200-500 | 14.2 | | 25.4 | | 19 | |
| | 501-1000 | 4.6 | | 10.4 | | 8.2 | |
| | >1000 | 0.6 | | 7.5 | | 4.7 | |
| Mergasor | <200 | 77.8 | | - | | 50.5 | |
| | 200-500 | 16 | | - | | 32 | |
| | 501-1000 | 3.7 | | - | | 14.6 | |
| | >1000 | 2.5 | | - | | 2.9 | |
| Chwman | <200 | 61.3 | | - | | 54.3 | |
| | 200-500 | 32.2 | | - | | 34.8 | |
| | 501-1000 | 6.5 | | - | | 9.8 | |
| | >1000 | 0 | | - | | 1.1 | |
| Dhashti Hawler | <200 | - | | - | | 63.7 | |
| | 200-500 | - | | - | | 27.5 | |
| | 501-1000 | - | | - | | 6.6 | |
| | >1000 | - | | - | | 2.2 | |
| Khabat | <200 | - | | - | | 25.5 | |
| | 200-500 | - | | - | | 35.1 | |
| | 501-1000 | - | | - | | 24.5 | |
| | >1000 | - | | - | | 14.9 | |

- Data not available -Source: Table 1 references.

6. Variation in Basic Socioeconomic Characteristics by Size

Sustainable development demands that the social and economic needs of rural communities be considered in relation to concern for environmental protection. Such protection is only likely to be effective if it takes into account the various uses made of the countryside by the people who live there. Socioeconomic is an umbrella term with different usages, in many cases socioeconomic focus on the social impact of some sort of economic change. Such changes might include a closing factory, market manipulation, the signing of international trade treaties, new natural gas regulation, etc.

The goal of socioeconomic study is generally to bring about socioeconomic development, usually in terms of improvements in metrics such as GDP, life expectancy, literacy, levels of employment, etc. While specific research on the rural population have on the immigration and movement remains a priority, attempts at improving the understanding of community socioeconomic systems and policies concerned should not be overlooked. Models may have been developed to analyze various community approaches, but the basic data on the underlying aspects affecting the whole system and understanding of the role of population structure, socioeconomic backgrounds, and community behaviors and perceptions of the public on rural studies should be of equal importance. Socioeconomic aspects of rural conditions can be captured using information about demographic patterns, housing, economic activity, travel and access to services, deprivation of public health and neighborhood characteristics. Impact studies differ in terms of geographic coverage, scale of analyses, and approach adopted in measuring impacts. Accordingly, the scale of analyses varies among different studies, ranging from household to village, region, national to international levels.

The differences of some socioeconomic characteristics and how it varies by village size is examined in this section. The characteristics measured consist of; non-farming worker, illiterate ratio, availability of school and health facilities in a village, accessibility of a village via paved roads and availability of drinking water. Table 3 presents the percentage of villages having basic socioeconomic characteristics by village size. In order to have an adequate sample, this table is shown for the nine districts in Erbil state combined.

Table 3. Percentage of villages having basic socioeconomic characteristics by village size-Erbil governorate

| Village having | < 200 | 201-500 | 501-1000 | >1000 |
|--------------------|-------|---------|----------|-------|
| Non-farming worker | 6.4 | 11.3 | 16.8 | 45.9 |
| Illiterate people | 38.6 | 30.3 | 26.7 | 20.1 |
| Secondary school | 4.8 | 18.6 | 40.3 | 60.8 |
| Health centre | 2.6 | 11.7 | 36.0 | 57.8 |
| Paved roads | 22.7 | 35.7 | 72.5 | 80.7 |
| Drinking water | 10.6 | 36.7 | 67.9 | 82.1 |

Source: KRG. (2005). Village survey data result. Ministry of construction & development. Directory of rural development-Erbil. (unpublished data).

The proportion of people working in the non-farming sector can be taken as a substitute indicator of the economic condition of households. It is clear from Table 3 that the proportion of people involved in the non-farming sector increases with an increase in the size of the village, i.e. a 45.9% of people living in large villages are involved in the non-agricultural sector compared to only 6.4% of people living in small villages. For the proportion of illiterate people the situation is altered. The percentage of people who are illiterate decreases with an increase in the size of the village, i.e. a 38.6% of people living in small villages are illiterate compared to only 20.1% of people living in large villages. As expected, the percentage of accessibility for some basic facilities like; secondary schools, health center, paved road and drinking water are higher in large villages if compared to either the medium or the small villages. For instance, while only a little proportion of the smaller villages have access to secondary school, health center, paved road and drinking water with 4.8%, 2.6%, 22.7% and 10.6% for each respectively, it is observed that 60.8%, 57.8%, 80.7% and 82.1% of large villages have access to the mentioned basic facilities respectively.

7. Conclusion

Though the growth of the Kurdistan economy in the recent years has been remarkable, the problem of rural development still remains a stunning one. Due to the uneven population distribution, there is also a marked variation in the size of the settlement. There are too many villages in the region, and their population size varies widely. The size of the villages' in Erbil, range from those with several tens of people to those with several thousand inhabitants. However, a notable feature here is the highest proportion of rural settlement with a population size of less than 200 persons which occupied nearly 55% of the total Erbil rural settlement in 2005. At local district level, similar feature can be found. The explanation for this situation is that, numerous parts of Erbil state are covered by hills and rocky area, which in turn affect the size of the rural settlements and the number of population in which, as the capacity of the land in this area does not support a large number of population to gather, so the small rural settlement category is common thing here.

The stipulation of basic facilities like how well a village is linked with other areas, availability of drinking water, presence of schools and health centers are important for the development of rural areas. Naturally, the larger the size of a village, the more cost-effective it will be to provide it with services. Hence, the changes in the distribution of population by village size may be thought of as beneficial to rural development in the region. While this can be so, there are a few cautions. First, the number of small villages is very large, and the rate of movement of population in the study area can only be of small help in transferring them into larger ones. There is a need to examine the situation in terms of the level of provision of facilities that prevail in small villages.

The consequences of uneven distribution of population and high proportion of small size village's situation in the study area have an unpleasant impact on the rural area. Because it is inevitably increase the spacing between settlements, the ratio of clustered to dispersed population, the distance inputs per capita required providing the remaining settlements with services, social functions and human companionship. Therefore Erbil state needs an effective rural planning if there will be ambition to obtain sustainable development in the area.

Village size is positively associated with better developmental opportunity, as it can be explained in terms of the Central Place Theory (CPT). It predicts that the size of the market depends on the geographic distribution of consumers, the transportation cost borne by consumers and any cost savings associated with the production and distribution of goods and services (Berry & Parr 1988; Henderson & Taylor 2003). The theory states that an increase in demand in the local market area is required to support a service by a community. Demand is often measured in terms of population size, population density and per capita income (Henderson & Taylor 2003). Yeboah (2007) argues that, in general, the size, composition and distribution of the population determine or rather influence the provision of health services. We find that larger villages have better access to basic facilities than the small villages, which can be explained to a great extent by higher demand for services in large villages which, also according to CPT, must be sufficient to cover the average cost of production (Abhishek, Sandip & Roy, 2008). There is one important issue in the context of the development. The connectivity of a village, through all-weather roads, seems crucial. If a village is connected by road, it increases mobility among its populace which in turn can facilitate a variety of other activities to promote employment. In addition, better accessibility will have a beneficial impact on the education and health of its residents.

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