



ROLE OF GIS IN DEMOGRAPHIC STRUCTURE OF JIND DISTRICT: A CASE STUDY OF SIRSA KHERI VILLAGE

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ABSTRACT:

India still live in village three fourth population live in 5.8 lac village spread everywhere, in every nook and corner of the country-from the Himalaya to the Indo Gangetic plain to coastal area row south, and from an arid area of the western hot and humid area of north east. In order to provide spatial information to transform timely and cost effective manner, development of scientific planing process can be effectively met by remote sensing based geo spatial natural resources layer,

spatial layers created from databases, stakeholder department data linked to spatial framework, GIS and information system as Geographic information and communication Technology(GeoICT) tools. For this endeavor resources data on 10,000scale is essential for scientifically depicting village level spatial information. The existing village cadastral maps (hard copy or digital) will be converted into digital format and will be co-registered with the georeference, orthorectified satellite data and created revenue boundary of the village. Our study focuses on sirsa kheri village located in jind district , haryana in india. It is one among the 43 villages julana block of jind district .the literacy rate of the study area is nearly by 74.11 , sex ratio ratio 856 and total population 1715. Before selection of sample households for continuous monitoring, the village census has been conducted in each selected village to understand the general and socio-economic profile of the village. This village profile is based on the village census carried out and qualitative information gathered by the project team.

Sirsa Kheri is a village in Julana Tehsil in Jind District of Haryana State, India. The latitude 29.1819 N and longitude 76.4685 E are the geocoordinate of the Sirsa Kheri.. It is one among the 43 village of Julana Block of Jind district. According to the census records, the village number of Sirsa Kheri is 60183. The village has 301 houses. It belongs to Hisar Division. It is located 24 KM towards South from District headquarters Jind, 8 Km. from Julana and 204 Km. from State capital Chandigarh.

Key Word – population , sex ratio, literacy rate.

Introduction :

Demography is the systematic study of population. The term is of Greek origin and is composed of the two words, demos (people) and graphein (describe), implying the description of people. Demography studies the trends and processes associated with population including – changes in population size; patterns of births, deaths, and migration; and the structure and composition of the population, such as the relative proportions of women, men and different age groups. There are different varieties of demography, including formal demography which is a largely quantitative field, and social demography which focuses on the social, economic or political aspects of populations. All demographic studies are based on processes of counting or enumeration – such as the census or the survey – which involve the systematic collection of data on the people residing within a specified territory.



Demography is a field that is of special importance to sociology – in fact, the emergence of sociology and its successful establishment as an academic discipline owed a lot to demography. Two different processes happened to take place at roughly the same time in Europe during the latter half of the eighteenth century – the formation of nation-states as the principal form of political organisation, and the beginnings of the modern science of statistics. The modern state had begun to expand its role and functions. It had, for instance, begun to take an active interest in the development of early forms of public health management, policing and maintenance of law and order, economic policies relating to agriculture and industry, taxation and revenue generation and the governance of cities.

Definition: A census of population is the total process of collecting, compiling, evaluating, analyzing and publishing demographic, economic and social data pertaining at a specified time, to all persons in a country or in a well-delimited part of a country.

There are two types of demography—

1. Formal Demography: statistical analysis of population i.e., total population, number of males, number of females, number of youth, working population, rural urban (quantitative data)

2. Social Demography: birth rate, death rate and migration that happens in a particular society.

- Consists of four processes .

- (i) Demographic Structure: number of people in an area,

- (ii) Demographic Processes: birth rate, death rate, migration,

- (iii) Social structure: composition of an area,

- (iv) Social processes: Processes by which individuals learn to live together in peace and harmony in society e.g. Cooperation, accommodation, mediation etc.

- Formal demography is to do with statistics, numbers, aggregates. The memorial quantification of data.

- Social demography is concerned with changes or the consequences of the population of a society and how it affects us.

The Malthusian Theories of Population Growth

- Malthusian Theory was propounded by Thomas Robert Malthus.

- According to him there are two important things that matter.

- (i) Population – People

- (ii) Means of substance – land (agriculture)

- According to him population can grow uncontrollably. It grows in ‘geometric progression’ (2, 4, 8, 16, 32, 64 ...). It is fast.

- Land gives limited return. It grows in arithmetic progression (2, 4, 6, 8, 10). It is slow.

As a result there is an imbalance in society.

- Population is growing uncontrollably, land is not able to sustain the large population which leads to poverty, hunger, saturation etc.

- Malthus came up with 2 solutions.



— Positive check: Natural disasters cause many people die and the population is naturally controlled. If one doesn't take care of themselves nature will take care of them e.g. earthquakes, tsunami.

— Preventive check: Man made e.g. late marriage, celibacy, contraceptives etc.

Study area:

Sirsa Kheri is a village in Julana Tehsil in Jind District of Haryana State, India. The latitude 29.1819 N and longitude 76.4685 E are the geocoordinate of the Sirsa Kheri.. It is one among the 43 village of Julana Block of Jind district. According to the census records, the village number of Sirsa Kheri is 60183. The village has 301 houses. It belongs to Hisar Division. It is located 24 KM towards South from District headquarters Jind, 8 Km. from Julana and 204 Km. from State capital Chandigarh. Sirsa Kheri Pin code is 126101, post office is in Nandgarh village and postal head office is Julana. The total Geographical Area of this village is 378 Hectares with nearly 301

Households residing. Sirsa Kheri nearby cities are Jind, Julana, Safidon, Rohtak etc.

Geology:

The village, by and large, is underlain by the quaternary alluvium, comprising chiefly clays, sand of various grades, kankar and occasionally gravel and pebbles. It has been observed that the clayey material generally constitutes between 31 and 81 percent of the caustic sediments down to a maximum drilled depth of about 151 meters from the ground level. Granular material comprising chiefly fine to coarse grained sand with occasional pebbles appear to be ventricular in shape with their longer axes generally running in the north-south direction.

Physiography:

Physiographically, it constitutes a part of the Punjab-Haryana plain, which is largely flat and featureless and is formed of Pleistocene and sub-recent alluvial deposits. Wind action in the past and man's role in recent times have played a prominent part in shaping the relief of the village which is located in a transitional zone between the sub-humid districts Kaithal, Panipat and Karnal in the east and the semi-arid district Hisar in the west. The village is a flat, monotonous upland plain. It is evident from the fact that the general elevation of the village ranges between 218 meters and 239 meters above sea level. As the spot-heights are examined more closely, one discovers that there is no general and consistent trend in the slope of the area.

Climate:

The climate of the village and its surrounding area is on the whole dry, hot in summer and cold in winter. The year may be divided into four seasons. The cold season from november to march is followed by hot season which lasts till the onset of the south-west monsoon. The monsoon withdraws by mid- September and is followed by the Post-monsoon or the transition period.

Rainfall:

The normal annual rainfall of the village is 515 mm which is unevenly distributed over the area. The south west monsoon, sets in from last week of June and withdraws in end of September, contributed about 84% of annual rainfall. July and August are the wettest



months. Rest 16% rainfall is received during non-monsoon period in the wake of western disturbances and thunder storms.

Temperature:

There is no meteorological observatory in the village, On the basis of records of the observatories in the neighbouring station where similar climatic conditions prevail, it is stated that from the beginning of March, temperature increases rapidly till June which is generally the warmest month. The mean daily maximum temperature during June is around 41°C and the mean daily minimum around 26°C. The heat in summer is intense. On individual days, the day temperature may occasionally exceed 47° or 48° C.

Humidity:

During the south-west monsoon-season July to September, the relative humidity is high, being over 75-80 per cent in the morning and 55 to 65 percent in the afternoon. High humidity of more than 70 per cent also prevails during the winter months of December to February. It is comparatively drier during the rest of the year. April and May constitute the driest part of the year when in the afternoon the relative humidity is 20 per cent or even less.

Winds:

Winds are generally light, with some strengthening in force during late summer and early monsoon season. In the south-west monsoon season, winds from the south-west and west are more common, with the easterlies and south-easterlies blowing on some days. In the post-monsoon and winter season, south-easterlies and westerlies are common in the mornings while northerlies and north-westerlies are predominant in the afternoons. During summer, winds are from west or south-west in the morning. In the afternoons, winds blow from directions between west and north.

Special Weather Phenomena:

Thunderstorms, in association with pre-monsoon and monsoon rains occur mostly during June to September. During the winter also, a few thunderstorms occur in association with the western disturbances. A few thunderstorms may be accompanied by hail. Occasional duststorms occur during the hot season. Fog is rare and occurs only in winter.

Soil:

The soils of the Sirsa Kheri village are sandy loam to loam in texture. According to physical characteristics, these soils may be divided into Sandy, Kallar or Rehi and Sierozem soil. This type of soil is formed due to alkaline reaction. The reclamation of Kallar soils calls for the lowering down of excessive salts by flooding or by gypsum treatment. Sierozem soil, these soils are light yellowish brown to pale brown in colour. Soils are calcareous and normally have a kankar layer at a depth of 0.75m to 1.25m. Almost all the soils are deficient in nitrogen, phosphorous and potash Salinity and alkalinity are the serious problems particularly in the irrigated area, wind erosion is also a common feature in this area. Wheat, Rice, bajra, Jowar, cotton are the main crops of the area.

Ground water:



The groundwater occurs in a thick zone of saturation in the alluvium both under confined and unconfined conditions. The shallow zone with free water surface, which is tapped chiefly by open wells and shallow tube-wells, is unconfined. The deeper aquifers which are underlain by extensive confining clays occur under confined conditions.

Water table is shallowest in the areas along canals. Water table is deep generally resting below 30 meters in the central part of the village. The water table records a general decline ranging from 0.01 to 2.48 meters during the extreme summer months. In the area where water level is closer to the land surface, water logging and soil Salinizations exist. The deeper aquifers are confined. The cumulative pressure head of the confined water has been generally recorded in the existing deep tubewells to vary between 2.5 meters and 11.5 meters from the ground level. The yield of the tubewells tapping such aquifers to the maximum depth of 998 meters ranges from 0.042 to 0.051 cubic meters per second.

In general the groundwater is alkaline in reaction, with little or no carbonate. The specific conductance of water varies widely ranging from 470 to 14,280 micro ohm/cm. The groundwater is excessively hard. The ground water at shallow depth up to 40 to 100m is fresh to marginal saline. Tubewells can be constructed upto the depth of 40-100 m for drinking a well as for irrigation purpose depending on the local hydrogeological conditions. Generally Calcium has been found to be dominant cation and Cl as dominant anion. Hence the ground water is of Ca-Cl type. Ground water is fit for drinking in large part of the village but have been found unfit in isolated patches.

Agriculture:

Agriculture is the backbone of the village as there are no industries to provide rural as well as urban employment. The majority of the population is engaged in agriculture. Accordingly there are two main cropping seasons in one year these are -

1. **Kharif crops** - Rice, Sugarcane, Jawar and Bajra are the main crops of this season. Kharif season starts from June-July with the start of pre-monsoon and lasts up to December.
2. **Rabi crops**- Wheat, Mustard and Berseem are the main crops of this season. It starts from December and lasts up to April-May.

METHODOLOGY :

the methods adopted to create a database of the entire sirsa kheri village using survey , gps and other mapping software tools also discussed in details. In this study , both primary and secondary data is used to develop the information system. Methodology is the central part of any research. It is the process used to collect data and to convert this data into meaningful information that fulfil the needs of our research purpose by applying different techniques.

The data is a collection of facts such as values or measurements. It can be numbers, words, measurements, observation or even just description of things. Geographical data shows both the location and characteristics of spatial features on earth. Data as a general concept refers to the fact that some existing information is represented in some form suitable for better uses. Data is a set of values of qualitative and quantitative variables. Mainly two types of data is being used: Primary data and Secondary data.

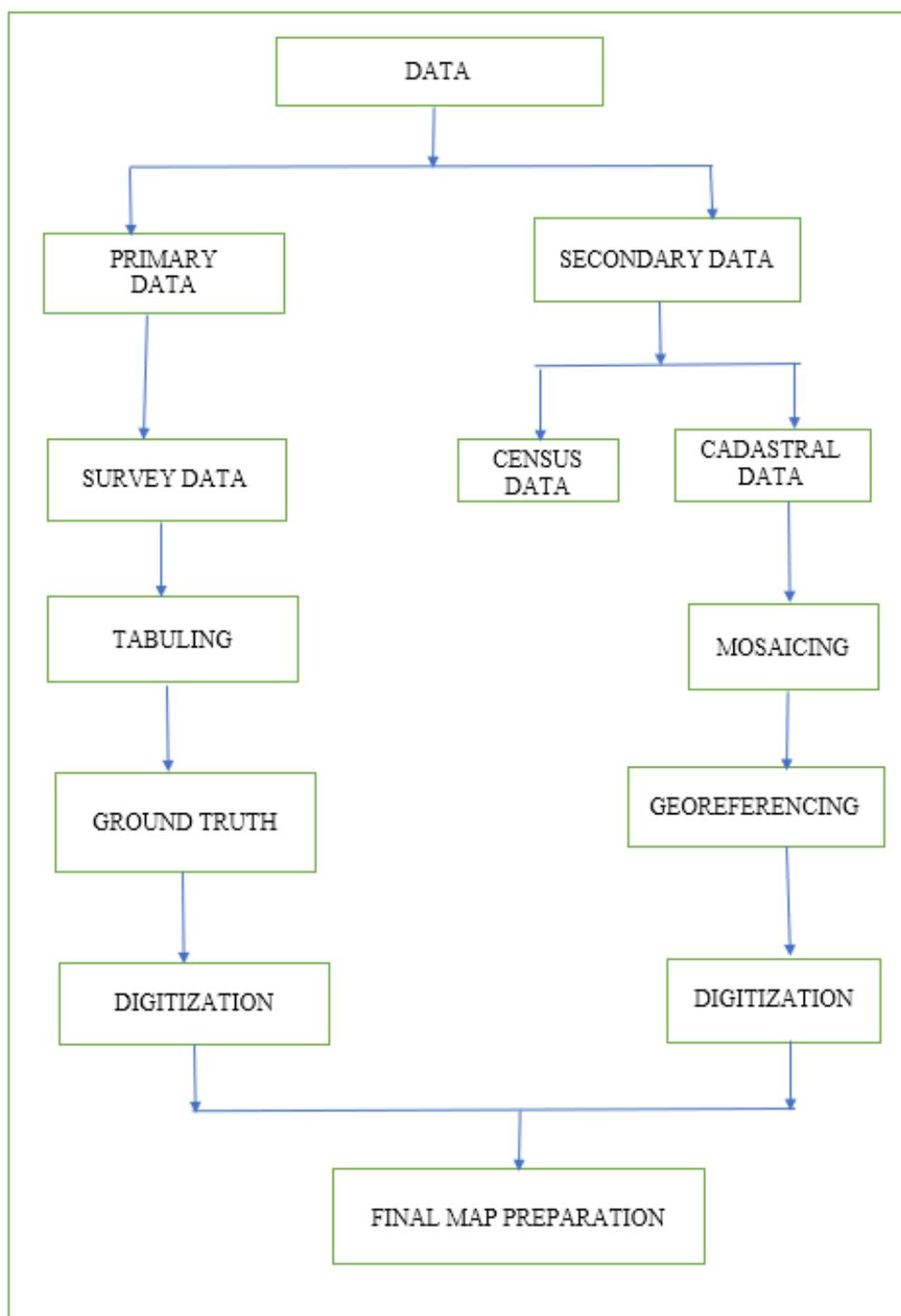
Primary Data:



A primary data uses first hand information about the study area which is collected by the researcher himself. There are several methods for collecting this data. This data is so reliable as it is collected for specific purpose and totally meets the needs of research question. But, the collection of primary data is a difficult and sometimes it may be very expensive also. By doing the household survey the minute information had collected from each household.

Secondary Data:

secondary data is the data that has been collected by the reading available from other sources. Secondary data is obtained from outside sources. Secondary data can provide a baseline for primary research to compare the collected primary data results. The sources of secondary data are Census surveys, organizational records and data collected through qualitative methodologies or qualitative research etc. Such as the census data and cadastral map were taken from the concerned departments.



population:

Sirsa Kheri is a medium size village located in Jind district, Haryana with having 1715 total population .Among total population 924 are Males and 791 are Females according to census data 2011. In Sirsa Kheri village population of children with age 0-6 is 255 which makes up 14.87% of total population of village. Average Sex Ratio of Sirsa Kheri village is 856 which



is lower than Haryana state average of 879. Child Sex Ratio for the Sirsa Kheri as per census is 723, lower than Haryana average of 834

	Total	General	Schedule caste	Child
Total	1715	1323	392	255
Male	924	701	223	148
Female	791	622	169	107

Source: Census of India(2011)

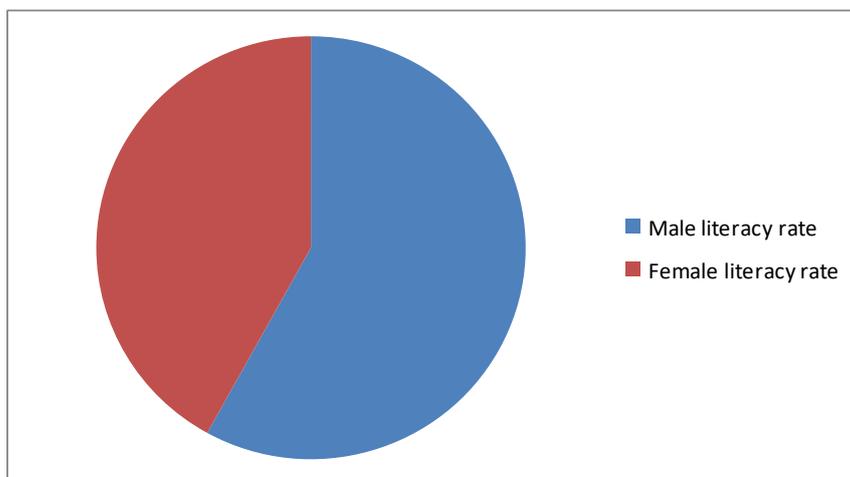
Sex ratio :

Sex ratio refers to the number of females per thousand males. India’s position is quite different than other countries.

As per 2011 census there are 856 females per 1000 males in the village which is lower than Haryana state average of 879. Child Sex Ratio for the Sirsa Kheri as per 2011 census is 723, lower than Haryana average of 834. Caste wise distribution of Sex ratio is in general caste is 887, in schedule caste is 758. There are 723 girls under 6 years of age per 1000 boys of the same age in the village.

Literacy Rate:

Sirsa Kheri village has lower literacy rate compared to Haryana. In 2011, literacy rate of Sirsa Kheri village was 74.11 % compared to 75.55 % of Haryana. In males the literacy rate 85.18 % while females literacy rate is 61.55% respectively. The dark side is that illiteracy rate of Sirsa Kheri village is 24.89 %. Male illiteracy ratio is 28% and females the illiteracy ratio is 46% in this village.



Future Recommendations –



It is recommended that rural population in India immediately requires micro-level information system, which can help the government for decision making, planning, and implementation of different projects in rural areas. These are some suggestions which may add wings to this work -AADHAR card linkage to the land units, 3-Dmodal creation of all households and assets of the village, mobile application may be developed, voter id can be joined to land units.

CONCLUSION:

Village information system is a platform to gather micro-level information about a village, The data from various agencies like survey of India, Census of India, Revenue Department etc. All is used at a single platform. But the real capacity of this system is that, it has very detailed information about each household like sex ratio, literacy rate, population. Moreover, this information has the exact dimension and location of each land unit in a village. So, these are the unique features which are new to develop in the country. Hence, it is concluded that Village Information System is a public portal to have accurate and reliable data about the village and will be very helpful for the holistic development of the village and the people. This system will help all in the cumulative development of village and truly lead to decentralized planning at village level. Also, the generation of information about the village, called Village Information System (VIS), comprises of all information related to facilities, infrastructure, population, building type, etc. give planning and development a more effective and meaningful direction.

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