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POPULATION SIZE, DISTRIBUTION AND GROWTH IN IRAN

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Information on population and its characteristics is fundamental in analyzing any nation's strength and future. Population size, distribution, and growth touch upon every aspect of life of people, individually and collectively, in any country in the world. Some scholars blame rapid population growth for most economic difficulties. While, others ascribe that economic development can resolve the population problem. Socioeconomic development and population policies reinforce each other. A rationally planned population size for the future requires insight knowledge about past and present trends of population change.

This paper attempts to provide part of this information and shed light on problems associated with rapid population growth in Iran. This paper discusses changes in the size of population through time, population distribution, and regional patterns of population growth of the 23 provinces. It has been argued in this paper that because of a large family size norm as a religious duty to increase the numbers of the Islamic faith, early age at marriage, especially among females, common practice of polygamy, and the war with Iraq, population will grow even faster. It is concluded that population policy must be integrated into the national development plans.

Population size, distribution over space and changes through time are the most essential considerations in order to analyze the present and future economic strength of any given country. These factors are also important in terms of determining precise social and spatial national planning procedures. Information on population in more developed countries is widely available to the researchers. For those scholars who are interested in studying population in the less developed countries obtaining data is not that simple. But development planning for the present and future in those countries is urgently needed. Most of these countries are in the process of transformation from agriculture to industrial economy and in many cases even their potential population and resources have not been fully assessed.

The 1976 census in Iran began on schedule. However, due to political unrest, processing and printing information into 186 volumes, complete results were not available until the early 1980s. Unlike the previous censuses, the 1976 census reports have not been widely distributed and utilized by scholars interested in the Iranian affairs. Thus, it is the intention of this paper to share some of the available data with those who may find them useful. The

major objective of this paper, however, is to describe the main features of population change, distribution and growth through time and over space for the country as a whole and its 23 internal subdivisions or ostans.

The first part of the paper presents some general information about the country. Part two deals with population change through time. In this part, some historical background about changes in population size and its annual rates of growth are discussed. With an annual growth of more than three per cent the population will double in about twenty years. The next part is devoted to spatial patterns of population distribution. In this part, the share of each province in the total population of the country and its population density in 1966 and 1976 are mapped, discussed, and the reasons behind such uneven spatial patterns are presented. Long history of the country, limited natural resources, such as water shortage and socioeconomic factors, are among the reasons.

The last part examines regional patterns of population change. In this part, the percentage of population change in the urban and rural areas of the 23 provinces between 1966 and 1976 are mapped and explained. A rough pattern of core-periphery, both for urban and rural areas, can be recognised. Unlike the core areas, the peripheral parts of the country are mostly underdeveloped and have higher percentage of population growth. This can be an indication of the late introduction of the family planning techniques to the periphery from the core during the Shah's government. Among factors affecting this specific spatial patterns of population growth, the interplay among fertility, mortality, and migration is briefly discussed. It is important to note that rural areas act as a reservoir of human resources of cheap labour for the cities.

It is suggested that with such a rapid rate of population increase no government can afford to not have a comprehensive planned policy toward population growth. Looking at the phenomenon of rapid population increase, either as a positive or negative factor in the overall process of development, the political decision-makers should not simply ignore the country's population size, change and growth.

The Country

With a population of 43.0 million in 1985, the country of Iran is located in the arid region of Southwest Asia, also referred to as the Middle East. Within the country one may find almost all representative types of physical and cultural aspects of the broader Middle East. From a physical viewpoint, the country has high mountain ranges similar to those of Turkey. Iran also has vast areas which are not very different from the Sahara desert. The major populated and cultivated areas of western Iran are a part of what is called the Fertile Crescent.

Physically, the country could be divided into three different landforms : (1) the Mountains, (2) the Caspian Sea Plain, and (3) the Interior. The mountainous areas include the Zagros and Alburz. The Zagros Ranges extend from northwest to southeast and occupy almost the entire western part of the country. Important features of the western highlands are a

series of tablelands and volcanic soils, especially in the northwest. With an annual precipitation of more than 40 cm. the area is the most productive and populated after the Caspian Plain. In most places pasture-lands are available for animal husbandry. The wool and hair of sheep and goats are used to support an important carpet weaving industry. Actually, 11 out of 23 provinces are located in the Zagros areas (Table 1). In comparison with the Zagros Ranges, the Alburz is narrower but higher in altitude. The northern slopes of the Alburz are well forested, but the southern slopes, mainly because of a rain shadow effect, are almost barren.

The Caspian Plain is a narrow fertile plain located between the Alburz ranges and the Caspian Sea. The Caspian Sea itself is a shrinking body of water which is about 24 metres below sea level. This is primarily because input from precipitation and rivers is less than evaporation. Fishing, especially in connection with the production of caviar, is very significant for the local people. Administratively, the Caspian Plain contains two provinces : Gilan in the West and Mazandaran in the east. The highest annual precipitation in Iran is recorded in Gilan at Anzali (Pahlavi) in the southwestern corner of this plain which is approximately 200 cm. The Caspian plain is the most important area in terms of rice production in Iran. It also produces tea, cotton, citrus, sugar cane, tobacco and other agricultural products.

The great Iranian desert, located in the interior parts of the country, covers about one-half of the total area of Iran. The mountains almost completely encircle the interior region. Rainfall in the central deserts is extremely low, amounting to about 1.5 to 2.6 cm. As a result of the cloudless and dry nature of the region, temperatures are very high during the day but they fall considerably during the night

From the central Iranian deserts, also called Kavirs, towards the south and east, the physical conditions change very little. In other words, the southern and eastern parts of the country are similar to those of the interior. The central parts of Iran include most areas of Semnan, southern Khorasan, Kerman, Yazd, and eastern parts of the Central and Esfahan provinces. The arid regions of Iran, in addition, cover all of the southern coasts and Sistan-Baluchestan.

Figure I displays the names of the 23 Iranian provinces or ostans. Ostan is the largest political subdivision in Iran. It is comparable to the state in the United States. Furthermore, these areal units are broken down into urban and rural areas. In Iran, any locality with a population of 5,000 or more is considered to be city. In the following section this definition is used to discuss spatial patterns and their changes through time.

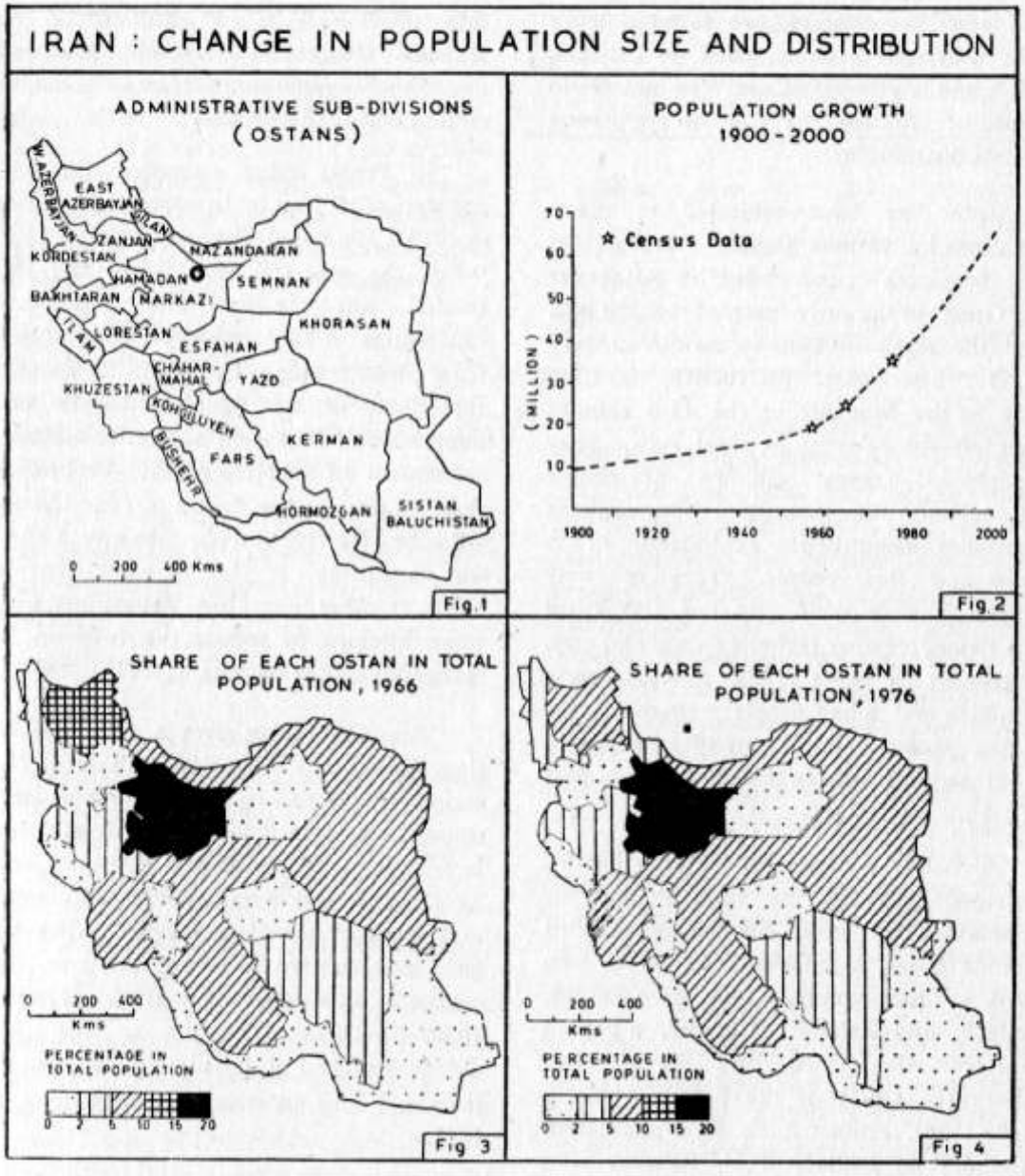
Population Change

Iran has a long record of population counts. The earliest enumerations were taken for tax and military conscription purposes, particularly during the Achaemenid dynasty (559 - 330 B.C.). Since ancient times, Iran has been one of the most populated countries in the world. Discussing the origin of the Iranian people, Olmstead (1948) believes that "The Iranian plateau was well populated and by the fifth pre-Christian millennium, numerous

Table 1

Name, Location and Capital City of the 23 Ostans

Ostan	Location	Capital city
1. Markazi (Central)	N. Central	Tehran
2. Gilan	Caspian Plain	Rasht
3. Mazandaran	Caspian Plain	Sari
4. E. Azerbayjan	N.W. Zagros	Tabriz
5. W. Azerbayjan	N.W. Zagros	Urmia
6. Bakhtaran	Central Zagros	Bakhtaran
7. Khuzestan	S. West	Ahvaz
8. Fars	S. Zagros	Shiraz
9. Kerman	S. East	Kerman
10. Khorasan	N. East	Mashhad
11. Esfahan	Central	Esfahan
12. Sistan & Baluchestan	S. East	Zahedan
13. Kordestan	Zagros	Sanandaj
14. Hamadan	Zagros	Hamadan
15. Chaharmahal & Bakhtiyari	Zagros	Shahrkord
16. Lorestan	Zagros	Khorramabad
17. Ilam	Zagros	Ilam
18. Kohgiluyeh & Boyer Ahmad	Zagros	Yasuj
19. Bushehr	South	Bushehr
20. Hormozgan	South	Bandar-Abbas
21. Semnan	N. Central	Semnan
22. Yazd	Central	Yazd
23. Zanjan	Zagros	Zanjan


IRAN : CHANGE IN POPULATION SIZE AND DISTRIBUTION
ADMINISTRATIVE SUB-DIVISIONS
(OSTANS)
W. AZERBAIJAN
EAST AZERBAIJAN
ARDABIL
ZANJAN
GILAN
KORDESTAN
MAZANDARAN
HAMADAN
SEMNAN
BAKHTARAN
MARKAZI
KHORASAN
LORESTAN
ILAM
ESFAHAN
CHAHAR-MAHAL
YAZD
KHUZESTAN
KOHGILUYEH
BUSHEHR
KERMAN
FARS
HORMOZGAN
SISTAN BALUCHISTAN
0 200 400 Kms
Fig.1
POPULATION GROWTH
1900 - 2000
☆ Census Data
(MILLION)
70
60
50
40
30
20
10
1900
1920
1940
1960
1980
2000
Fig.2
SHARE OF EACH OSTAN IN TOTAL POPULATION, 1966
0 200 400
Kms
PERCENTAGE IN TOTAL POPULATION
0 2 5 10 15 20
Fig 3
SHARE OF EACH OSTAN IN TOTAL POPULATION, 1976
0 200 400
Kms
PERCENTAGE IN TOTAL POPULATION
0 2 5 10 15 20
Fig 4

tiny hamlets sheltered a peaceful agricultural population" (p. 16). However, successive foreign and civil wars, famines, and infectious diseases have taken a heavy toll. Physical disasters, such as drought, flood, and earthquakes, are also notable in terms of affecting the size of population and its distribution.

Iran has been subjected to many invasions by various groups. Among them are the Greeks commanded by Alexander the Great in the early part of the 330 B.C. and the Arab invasion in the 6th century A. D. The most destructive invasion was by the Mongols in the 13th century that left the country in total ruin. They slaughtered many millions of people throughout the country. The slightest resistance meant entire annihilation of the cities and their people. They not only killed babies in their cribs but also killed any living creature including dogs and cats. According to Boyle (1968, p. 485) nearly a million and a half people were massacred by the Mongols in the city of Nishapur in Khorasan province in the northeastern part of Iran.

The 1966 issue of Iran Almanac provides data on the total number of population in Iran for some selected periods based on foreign explorers who lived in the country, such as Chardin, Pollach, and Zalatoff. Chardin, a French explorer who visited Iran during Shah Abbas the Great of the Safavid dynasty (1499-1736), estimated the total population at about 40 million. F.G. Pollach, who practiced medicine in Iran in the early years of the 1870s, estimated the country's total population at about six million. He blamed the reduction of population on epidemic diseases, especially on plague and smallpox, as well as an emigration of the members of various religious and national minorities. Zalatoff, a member of the Russian Geographical Society, also estimated the population in Iran at about six million during the 1880s.

Sir Percy Sykes estimated the total population of Iran to be around 10 million in 1915. He noted that the Iranian cities before the sea era were larger and that rainfall was heavier and agricultural capabilities of the country were greater than present time. Clark (1972) suggests that many of the figures given on total population of Iran were subject to arbitrary assessment of the local rulers. He believes that "at times these figures appear inflated when he [the ruler] wished to give a glowing impression of the numbers that he ruled; at other times low figures are given in an attempt to reduce the calls on his manpower by the national ruler" (p. 69).

The 1940 census gives a total population figure of about 15 million. This census is regarded to be the first attempt to use modern techniques in data gathering. It was not completed and provides only data on the total population of the country and some of the larger cities. For the most comparative purposes, however, this census is believed to be worthless (Firoozi, 1970, p. 220). According to the 1956 census Iran had a population of about 19 million. This increased to 25 million in 1966.

The 1966 census provide data on most demographic characteristics of the population and some economic variables that were needed for government development

planning. Preparation of the 1966 census, including processing data and publishing all the reports, took only two years. This may be compared with 1976 census which took about five years to prepare the final results. This delay was mostly due to political unrest in the country. The employees of the Statistical Centre of Iran were on strike for some time. The 1976 census in many respects is similar to the 1966 census. Thus, many population and socioeconomic characteristics can be directly compared.

In 1976, the total population of Iran was about 34.0 million. In mid-1985, the total population rose to 45.1 million. Changes in the total population of the country are shown by Figure 2.

For the country as a whole, the annual rate of population change is computed from a formula suggested by the United Nations as follows :

$$\left[\left(\sqrt[t]{P_2/P_1} \right) - 1 \right] \times 100$$

where :

P_1 = the population at the beginning of the period,

P_2 = the population at the end of the period, and

t = the number of interval years.

Thus, it is possible to use the census data and population estimates to calculate the annual rates of population change for different time periods. Table 2 shows the annual rates of population growth from 1956-1985. This is also broken into three shorter time periods that together cover almost 30 years of Iran's recent history of population change.

Table 2

Per cent Annual Rates of Population Growth for Selected Years in Iran

Year	Total	Urban	Rural
1956-85	**3.0**	**4.7**	**1.9**
1956-66	2.8	5.1	1.6
1966-76	3.0	4.9	1.6
1976-85	3.2	3.9	2.5

The annual rate of population growth varies for different time periods and between urban and rural areas. The overall annual rate of growth from 1956-1985 was 3.0. During the same time periods of about three decades the annual rate has already been higher in the urban areas than rural areas. Actually, the rate was two and a half times higher in the urban areas than in rural areas. This pattern of population change can be observed during all different time periods under study. Although the annual rate of growth for the country was the lowest during the intercensal period of 1956-1966, it was at its all time high of 5.1 in the urban sector which was more than three times higher than that of rural sector.

The annual rate of growth in the rural areas stayed both low and almost csontant for about twenty years. This can be ascribed to higher levels of mortality and emigration from these areas. For the most recent period of 1976-1985, the annual rate of population growth in the rural areas was 2.5 per cent. This can be an indication of a

decline in death rates and out-migration. The effects of slower rate of rural-urban migration can be discerned from smaller annual rate of population growth in the urban areas. Nevertheless, the highest annual growth rate for the country's population is recorded during this most recent period under study. This was 3.2 per cent which is considered to be one of the highest in the world.

A demographic transition model can be applied to the population change in Iran. Most of standard transition models have three stages of high stationary, expanding, and low stationary (Chung 1970). Some authors divide the second stage into two phases : early and late expanding. With a crude birth rate of 41 and crude death rate of 10 per 1000 in 1985, Iran can be assigned to the late expanding phase of growing population. This stage is characterized by a stable low death rate and decreasing birth rate. In this respect Iran is not very different from many developing societies. Still we are not aware of the effects of present government policies on population size and growth. Undoubtedly, present government's lack of family planning, internal political unrest, and the war with Iraq will modify these population aspects.

Population Distribution

Many social scientists are interested in the uneven ness and concentration of population over space and through time. Thus, this part sheds some light on the spatial patterns of population distribution. First, the share of each province in the country's total population during the 1966 and 1976 censuses will be given. Then, population density in the 23 ostans for the same time periods will be presented. Later, some reasons behind these specific forms of population distribution will be discussed.

Figures 3 and 4 show population distribution among the Iranian political subdivisions in 1966 and 1976. The values that were used to produce the subsequent maps are shown in Table 2. As can be seen from these maps, the total population in Iran was very unevenly distributed among the 23 ostans. In 1966 the largest number of people lived in the Central, East Azerbayjan, and Khorasan. Together these three ostans had close to 40per cent of the country's total population. When Mazandarn, Esfahan, and Khuzestan were added to this group they had more than 60 per cent of the total population. At the same time, some smaller ostans such as Ilam, Kohgiluyeh, and Semnan each had less than one per cent of the country's total population.

When we compare the two maps (Figures 3 and 4), we note that the patterns of population distribution between 1966 and 1976 have not dramatically changed. Except for the Central ostan's share that increased, most of the changes are very small. Having more than one-fifth of the country's total population, the Central ostan surpasses all other provinces. Although most of the changes in the share of total population of the ostans are minimal, decreasing share of other ostans can mean gain by the central province.

The idea of population density relates the number of people to the space they occupy. In this study, due to lack of data, only crude population density will be discussed. Unless reference is made to another type of density, population per area in this study is simply called popula-

Table 3

Data on the Variables Used in This Study

Ostan	Per cent fo Total 1966	Per cent of Total 1976	Density 1966	Density 1976	Urban growth 1966-1976	Rural growth 1966-1976
1. Central	19.9	21.4	54.5	78.5	60.8	6.5
2. Gilan	6.9	4.7	88.0	107.3	51.9	13 5
3. Mazandaran	7.3	7.1	39.0	50.3	76.2	15.0
4. E. Azer	10.4	9.5	39.3	47.6	57.3	9.1
5. W. Azer	4.3	4.2	24.9	32.2	60.9	18.7
6 Bakhtaran	3.1	3.1	33.3	40.4	58.6	12.2
7. Khuzestan	6.3	6.5	29.4	33.7	44.4	31.2
8. Fars	5.7	6.1	11.9	15.2	50.3	35.4
9. Kerman	3.0	3.2	4.4	5.6	78.5	30.9
10. Khorasan	10.0	9.7	8.0	10.4	71.4	17.6
11. Esfahan	6.8	5.8	15.0	20.8	65.1	8.5
12. Sistan	1.8	1.9	2.8	3.6	125.7	31.0
13. Kordestan	2.5	2.3	24.8	31.3	85.9	14.5
14. Hamadan	3.5	3.2	44.1	53.9	40.9	15.7
15. Chaharmahal	1.2	1.2	20.3	26.6	60.2	20.7
16. Lorestan	2.7	2.7	24.5	29.5	77.9	22.8
17. Ilam	0.6	0.7	11.7	13.5	140.7	54.1
18. Kohgiluyeh	0.6	0.7	13.4	17.2	101.0	46.4
19. Bushehr	1.0	1.0	9.4	12.5	118.1	15.9
20. Hormozgan	1.4	1.4	5.3	7.0	132.9	15.5
21. Semnan	0.8	0.7	2.5	3.0	38.3	4.9
22. Yazd	1.1	1.1	4.9	6.3	75.7	-11.5
23. Zanjan	1.8	1.7	21.1	26.5	75.1	15.1

tion density. This was calculated by dividing the total population of each ostan by its area. Unfortunately, this measure of distribution is not indicative of the type of land use and does not show variations of population within each of the spatial units under study.

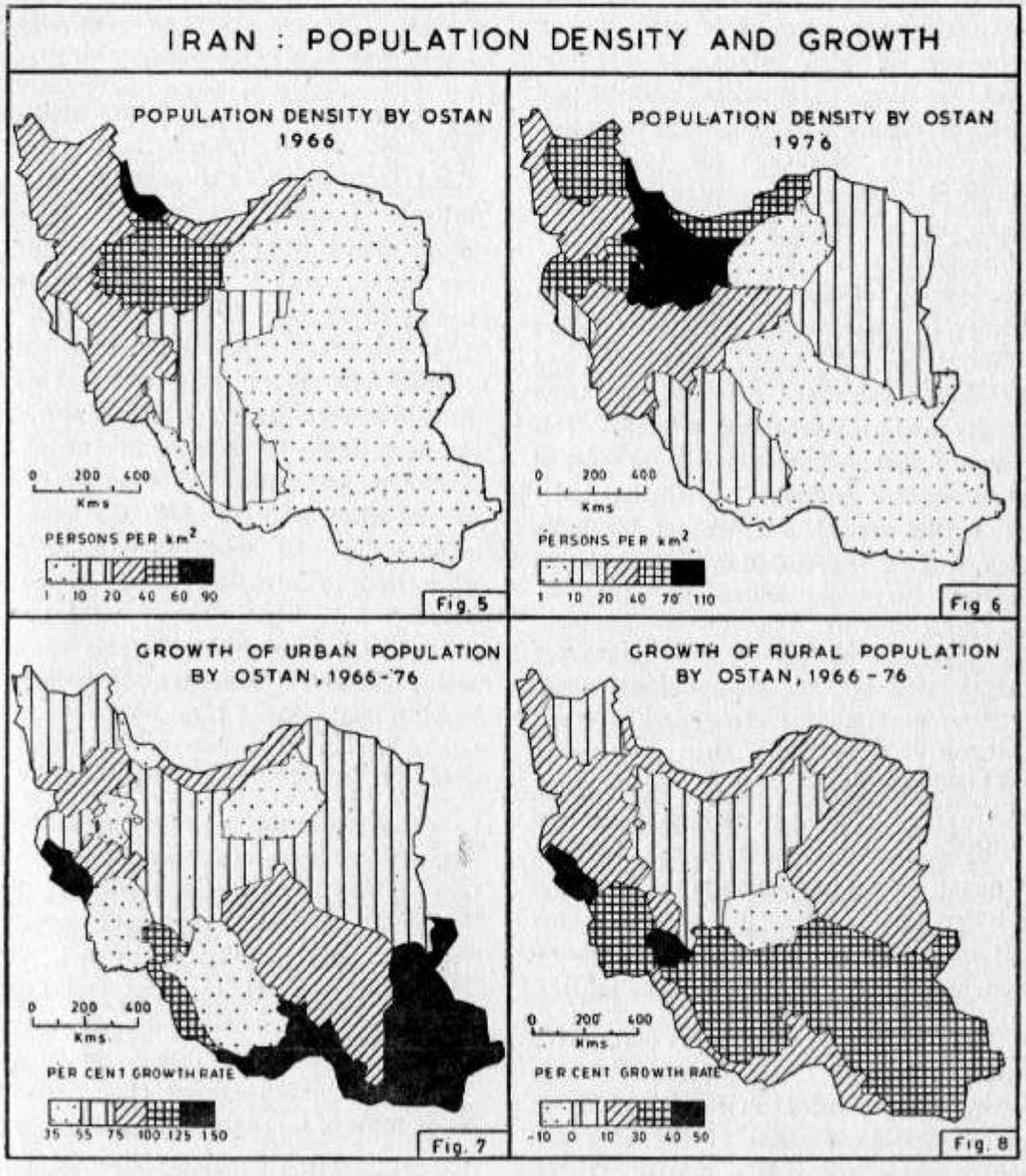
Iran is one of the less densely populated countries in the Middle East. In 1956, the population density of the country was 11.5 persons per square kilometre. This grew to 15 6 and 20 5 in 1966 and 1976. Population density in 1985 was about 27.0 persons per square kilometre. It is important to note that almost half of the area of its nonecumene lands mainly consist of deserts and high mountains. The population density pre arable land was 66 in 1981 (Population Reference Bureau). Arable lands include the lands under permanent cultivation, lands under trees, and pasture lands. Some studies assume that between 7 to 10 per cent of the total area of Iran is under permanent cultivation (Fisher 1971 and Saney 1974). Therefore, populationper cultivated area in Iran in 1985, using the higher percentage, would be around 270 persons.

Within the country in 1966, the main concentration of population was in the north, north centre, and west. Population density of the ostans decreased toward the south and east In both 1966 and 1976, Gilan, a tiny ostan in the southwestern corner of the Caspian plain, had the highest population density in Iran (Figures 5 and 6). It reached an all time high of 107.3 persons per square kilometre in 1976. During the same census periods this ostan was followed by the Central province. This province, that includes the city of Tehran, had a population density of 55 persons per square kilometer in 1966 which increased to about 80 in 1976.

Most of the eastern and southern parts of the country had very small population densities in 1966. Actually, seven ostans in these areas had population densities of less than 10 persons per square kilometre. The population density in some provinces, such as Semnan and Sistan, hardly reached 3 persons per square kilometre. Although some provinces had higher population densities in 1976, especially in the south and east, the general spatial patterns of population density were not much different from those of 1966.

Many reasons can be given for the wide range of the population density that varies from less than 10 to more than 100 persons per square kilometre Among the most important factors, historical problems, environmental conditions, and socioeconomic factors can be mentioned. One of the effects of the past history may be the continuous cultivation of the land for more than twenty-five centuries. Nothing had been done for maintaining the fertility of the soils, such as applying fertilizer and preventing soil erosion. Iran's geographical position *per se* has made it to be a bridge for communication between the east and west in the old world. In the beginning, most of today's large cities around the Great Iranian desert were small caravan centres that were located on the historical trade routes from China and India to the ports on the Mediterranean Sea and Europe.

Among environmental factors, climate more directly shapes the type of land use


IRAN : POPULATION DENSITY AND GROWTH
POPULATION DENSITY BY OSTAN
1966
0 200 400
Kms
PERSONS PER km²
1 10 20 40 60 90
Fig. 5
POPULATION DENSITY BY OSTAN
1976
0 200 400
Kms
PERSONS PER km²
1 10 20 40 70 110
Fig 6
GROWTH OF URBAN POPULATION
BY OSTAN, 1966-76
0 200 400
Kms
PER CENT GROWTH RATE
35 55 75 100 125 150
Fig. 7
GROWTH OF RURAL POPULATION
BY OSTAN, 1966-76
0 200 400
Kms
PER CENT GROWTH RATE
-10 0 10 30 40 50
Fig. 8

and economic activities related to agriculture. In Iran, climate is characterized by marked continentality with extreme temperatures, great contrast in rainfall, and frequency of high winds. In addition, great variation, in altitudes intensify the effects of climate condition on human life. A correlation coefficient of -0.2533 was computed between population density of the ostans and mean annual temperatures. Although this is a very weak correlation, the direction of this association shows that density is lower in the areas with higher temperature. A strong correlation of 0.7325 was calculated between population density and mean annual rainfall. This indicates that higher densities are found where rainfall is higher. Actually, variation in this variable can account for more than half of the variation in population density.

In more arid regions, populations are concentrated around the traditional qanat systems, man made underground channels that carry water from their sources in the highlands to the place of consumption. The qanat systems are efficient methods of utilizing scarce resources, such as water. A qanat system is expensive to build but it is dependable, consuming no energy, does not deplete water sources, has no evaporation, and is pollution free (Kamiar, 1983).

Iran is located in one of the earthquake belts of the earth. The major earthquakes have been recorded more frequently in the mountainous areas of the west and north, which are well populated. Therefore, earthquakes have always been associated with many victims. The structure and material used for building houses in the rural areas and around major cities contribute heavily to the number of people killed by the earthquakes. Houses are mostly made of mud or sun-dried bricks. They are very unstable against the weakest kind of earthquakes.

In Iran, the economy is predominantly agrarian and is characterized by low standard of living in contrast to the more urbanized and industrialized countries. More than half of the population live in the rural areas. The most important source of income for them is agriculture and related activities. The most accessible ostans are more populated. Through private and governmental investment, they become more attractive to people in search of better life. An example of this is the Central ostan and the country's capital city of Tehran. In terms of total population in 1976, the city of Tehran was seven times larger than Esfahan, the second largest city in Iran. This confirms that Jafferson's (1939) "law of the primate city" is applicable to Iran.

Regional Patterns of Population Change

Changes in the size of population affect regional levels of development. Population growth may accelerate or decelerate development by increasing the labour force or by creating more mouths to be fed. It is important to know the past and present trends in regional population change in order to speculate future patterns of growth. Uneven spatial change is the main topic of this part of the paper.

The spatial patterns of population change are shown by Figures 7 and 8. Both of these maps are based on the percentages of population change, increase or decrease, for urban and rural areas in 1966 and

1976. The percentage population change is calculated by subtracting the two total populations of each province, for example in 1966 and 1976, dividing the difference by the total population at the beginning of the period and multiplying the result by one hundred. This measure of population increase was used to make the changes more visible on the maps. This was preferred over the annual rate of population growth because the latter measurement had little spatial variation.

As can be seen from Figure 7, for the urban areas between 1966 and 1976, the highest increase in population is recorded for ostans that are mostly located in the west, south and southeast and considered to be less developed and less accessible. For example, provinces like Ilam, on the border with Iraq; Hormozgan, on the coasts of the Gulf of Oman; and Sistan, on the border with Pakistan; more than doubled the size of their urban population in only 10 years. For the same period of time, Semnan, Hamadan, Khuzestan, Fars, and Gilan had the lowest percentage of urban population increase.

The spatial patterns of population increase in the rural areas between 1966 and 1976 are portrayed by Figure 8. Again, Ilam ostan had the highest percent of population increase. This ostan was followed by Kohgiluyeh which is located in the inaccessible areas of the Zagros. Once more the highest percentages of population growth are found in the peripheral areas of the country. The core part of the country, including four provinces, hadthe smallest percentage of population growth. In fact, Yazd province had a negative population change. Other ostans in this region, such as Semnan, the Central, and Esfahan had less 10 per cent increase in their rural population in ten years.

The sharp dissimilarity in terms of population change between urban and rural sectors can be observed from the ranges in the percentage of population growth on their respective maps (Figures 7 and 8). For the urban areas the range is 115, for rural areas it is only 65. This not only indicates higher levels of growth and spatial variation in urban areas. It also shows variation in the pull and push factors associated with rural-urban migration.

Several reasons for this uneven spatial patterns of population change can be given. Among them are : changes in the vital rates, population movement especially rural-urban migration, and population redistribution initiated by the government. These factors, however, are not independent of each other. They not only interact with one another, they also have mutual relationship with changes in population.

Changes in the vital rates in Iran began in the early years of the 1950 s when the country was in the high stationary stage of the demographic transition. The spatial patterns of urban population growth in the less developed areas can be a reflection of the late introduction of modern health, piped water, urbanization, education, and political stability. Means of death control, not birth control, were diffused slowly to these regions thus leading to an increase in fertility rate and longer life expectancy which resulted in a population explosion in these areas.

Except for few areas, throughout Iranian history the rural areas have not been very attractive to people. Economi-

cally speaking, agricultural activities are more under influence of the harsh environmental factors, such as lower or lack of rainfall, soil infertility, extreme temperatures, and many others. In addition social relations of production in the landlord-peasantry system in many ways is so brutal that it is even worse than that of the master-slavery system. The two factors of environmental constraints and feudalism are a part of a larger system that pushes rural population out of their villages. Consequently, the rural sector acts as a reservoir for the higher percentages of population increase in the urban areas. In the urban areas, at least there is hope of finding a job, obtaining basic education, having access to the health services, and enjoying social amenities of life. The availability of the "petro-money" in the cities provided an extra incentive for rural-urban migration and made the major cities more appealing to the peasants. The government to some extent had a role in the redistribution of population by sending government employees and security forces to the lesser developed ostans. The government personnel reside mostly in the cities of the peripheral regions. Thus, they may have some effects on the size of population.

The lower percentages of urban population growth in some ostans can be related to the attractiveness of their rural sector. Compared with other rural areas, farmers in Gilan, Fars, Hamadan, and Khuzestan are better off. So, rural population mostly do not emigrate. With the booming economy of the southern coastal province of Bushehr and Hormozgan in the early 1970s, many migrants may have originated from the neighbouring ostans of Fars and Khuzestan.

As in a gravity model, the size of the populations and the distance travelled by the migrants affect the highly uneven distribution of urban population increase. In the earlier time periods, the biggest cities exert a strong pulling force. After the near saturation is reached the biggest cities lose some of their attractive power. Higher unemployment, higher rents, and higher crime rates encourage potential migrants to go to the small and medium size cities. In other words, the smaller size and mostly local regional cities act as intervening opportunity factor in the processes of migration. This can be an indication of lower urban population growth of the ostans that have very large cities, such as the Central ostan.

The more distinctive spatial patterns of rural population, showing a center-periphery relation, can be explained by the fact that the means of death control were introduced late in the southern and other marginal areas. Although these peripheral ostans send migrants to their respective urban areas, they still hold higher fertility rates to rank them high on rural population growth. The patterns of urban population growth correspond to the introduction of family planning during Shah's attempt to reduce population growth in the 1960s in the core areas that diffused slowly to the other parts of the country.

The size of population itself and the definition of the urban centre also can be involved in the processes of population growth. If a province has a large total population at the beginning of the period under study, the percentage increase looks

to be smaller compared with those ostans that have small total populations. The central province provides an example of this case. As pointed out earlier, the urban centers are defined by their population size. Any locality with a population of 5,000 or more is classified as urban. Yet, between 1966 and 1976 many big villages with populations of smaller but close to this minimum requirement may have changed their status and become urban. This can be another reason for the higher percentages of population increase in the urban areas.

Conclusion

The purpose of this paper was to examine the main features of population size, distribution, and growth in Iran as a whole and its 23 internal administrative subdivisions between 1966 and 1976. It is believed that with an annual growth rate of about three per cent the country's population will double in about twenty years. This means that Iran, in terms of population size, will stay as one of the largest countries in the Middle East. Some historical, ecological, and socioeconomic factors are mentioned for affecting uneven spatial patterns of population distribution within the country. Changes and interactions between fertility, mortality, and migration are perhaps the main causes of varied rates of regional population increase or decrease.

Shah's government was for population planning and thus encouraged family programme and birth control (Moore, Asayesh, and Montague 1974). The present government has not been concerned and not defined its approach regarding rapid and uncontrolled population growth. Although, some of the religious political leaders are not against the usage of the contraceptive devices, it is unlikely that they will support family planning. While increasing the number of the believers of the Islamic faith is a religious duty, marriages especially among females in the early ages in rural areas are not uncommon, and polygamy still is widely practiced. As a result the population in Iran may grow even faster in the near future.

Iran has been at war with Iraq for more than five years now. The population of Iran is almost three times larger than Iraq. This, at least numerically, has provided an important advantage to Iran. Therefore, the policy makers may think twice about reducing the growth of population. In this case, the question is whether the present government is prepared to take care of the problems associated with rapid rates of population growth, such as providing basic services and employment.

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CHANGES IN THE DISTRIBUTIONAL PATTERN OF WORKERS IN MANUFACTURING IN INDIA : 1901-1971

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The relative share of the workers in manufacturing, both household and non-household, in India has remained almost static since the beginning of the present century. In 1901, areas with a comparatively high percentage of manufacturing workers included the metropolitan cities of Bombay, Calcutta, Madras and Delhi, some progressive princely states, and a few scattered districts. There was only a small change in this spatial pattern by 1971. A few new areas of manufacturing activity did emerge on the industrial map of India. Princely states in general recorded a relative decline in the share of manufacturing workers. The four metropolitan centres, along with their adjacent pockets, had expanded spatially to grow into extensive manufacturing concentrations.

It is well known that economic progress and industrial development are closely linked. The low level of national income in India and the corresponding low standard of living, can partly be ascribed to its failure in building up a strong industrial sector. Not only has the share of workers in manufacturing (both household and non-household taken together) remained almost static, areas with large concentrations are very unevenly distributed.

In order to obtain an objective temporal-spatial picture of industrialisation in India during the present century, this paper makes use of the Census of India data. The data have been analysed for the years 1901, 1931 and 1971. The analysis could not be extended to the 1981 census because of the lack of comparable data. In order to keep a check on the vagaries introduced by definitional changes at the different censuses, data pertaining to male workers have only been put to service. Data for females were not rated as reliable or comparable. The relevant data for 'manufacturing' workers was obtained from the Class "Preparation and supply of material substances" in 1901 and 1931 and from the Divisions "Manufacturing and repair" in 1971.

The large inter-regional differences in industrial development in developing countries, particularly in India, have been attributed to the type of industries which were set up here and to the consequent pattern of linkages which developed between regions. In the 'pioneer industrial countries', industrialisation started with those industries which processed domestic

or imported primary products into goods oriented to final demand. Although such industries were developed later in underdeveloped countries also, a large proportion were those units which gave 'final touches' to goods imported from abroad. In the beginning, these industries were "antiseptically linkage free; materials were imported from abroad, some value was added to them through mixing, assembling and packaging, and the finished product was rushed to the final consumer" (Hirschman, 1958, p. 12). Alternatively industries catered only to more lucrative consumer demand which was confined to a few areas of conspicuous consumption. As a result, manufacturing got localized mostly in port cities, resulting in enclaves of development. The growth of these enclaves led to a retarded development in other areas as skilled labour, resources, and savings of the latter were attracted to the former.

The spatial model arising from the operation of such forces has been described by Chattopadhyay and Raza (1975). They viewed the contemporary spatial patterns of development as a superimposition of government efforts toward a balanced regional development on an already well entrenched pattern of regional disparities inherited from the colonial past. As a result of colonial influence, port enclaves emerged where development influences were impounded. These were marked by a preponderance of tertiary activities which turned them into consumption rather than production centres. Regional disparities got accentuated even after Independence because the new centres of public investment failed to develop as mature industrial regions (Kundu and Raza, 1982, pp. 4-10). Therefore, the location and subsequent spread of industries was contingent not only on the distribution of resources but also on the prevailing politico-economic milieu in the country.

Manufacturing Workers : 1901

In 1901, manufacturing employed a little over 7.5 million male workers, that is, 9.77 per cent of the total male workforce. Only 3 per cent of the districts had more than 20 per cent of their male workers in this activity. Conversely, in nearly 88 per cent of the districts manufacturing accounted for less than 15 per cent of the male workers (Table 1).

Table 1

INDIA : Districtwise Distribution of Workers Engaged in Manufacturing, 1901-1971

Percentage of workers	Percentage of districts		
	1901	1931	1971
0.00 - 4.99	14.64	28.57	37.75
5.00 - 9.99	40.00	46.84	38.59
10.0 - 14.99	33.21	16.61	13.52
15.0 - 19.99	9.64	5.65	6.20
20.0 - 24.99	1.43	1.33	1.97
25.0 - 29.99	0.36	1.00	1.13
30.0 and above	0.71	—	0 85

Source : Derived from
(i) Census of India1901, Table XV,
(ii) Census of India 1931, Table X, and
(iii) Census of India, 1971, Table B IV Part A.

Bombay, Calcutta, Delhi and Madras were among the few districts which recorded a relatively high percentage of 30.65, 24.78, 21.58 and 26.82 respectively. Most of the districts in Punjab, western part of United Provinces (now called Uttar Pradesh), northern part of Central Provinces, Kathiawar, and Rajputana as well as Bundelkhand Agencies had over 10 per cent of their male workers in manufacturing (Fig.1 a). On the other hand, the entire northeastern region was noted for a very small percentage of male workers in manufacturing. The same was the case with northern Bihar, Bengal and the United Provinces, and southwestern districts of Bombay Presidency, except Chitaldurg.

The dominance of Bombay and Calcutta was explained by the beginning of modern factory industry at these places. Agglomerative forces led to their increasing industrialisation.

Indeed the railways played a crucial role in structuring the regional pattern of industrial employment in India. The differential structure of the rail freight rates attracted industry to the ports. As a corollary, these impeded its development in the inland centres. This effect being especially felt by those industries which were dependent on coal as a source of fuel (Hurd, 1982, p. 756).

The initial advantage of Bombay was its high degree of connectivity with the rest of India. Later, the entrepreneurial talent of its inhabitants, the financial institutions and the availability of a pool of skilled labour resulted in the establishment of more factories. The location of Calcutta on the estuary of a system which flows through the vast densely populated north Indian plain and at the centre of the jute, tea and coal producing region was responsible for the expansion of manufacturing at this place. Besides jute mills, it had a number of engineering firms also.

Most of the inland urban centres, such as Delhi, were trading and administrative towns rather than centres of manufacturing. The relatively high proportion of manufacturing workers in some of the princely states was explained partly by the support which the luxury industries got from the princely courts.

To recapitulate the story again, the overall weakness of the Indian industrial sector in the beginning of the present century could be attributed to the historical factors which shaped the course and structure of industrialisation in the nineteenth century. This century was characterised by a decline of indigenous manufacturing as a result of competition from cheaper factory made goods. This process was further aggravated by the fiscal and freight policies of the Imperial government which favoured the imported goods. The establishment of alien rule had also resulted in a change in taste in favour of factory made articles.

As a result of the above mentioned factors, factory industry in India was first established only in the middle of the nineteenth century. At first, only cotton and jute industries were set up. Other industries took time to emerge. Engineering was limited to railway workshops at Bombay and Jabalpur. There were only six woollen textile mills and eight paper mills in India near the close of the nine-

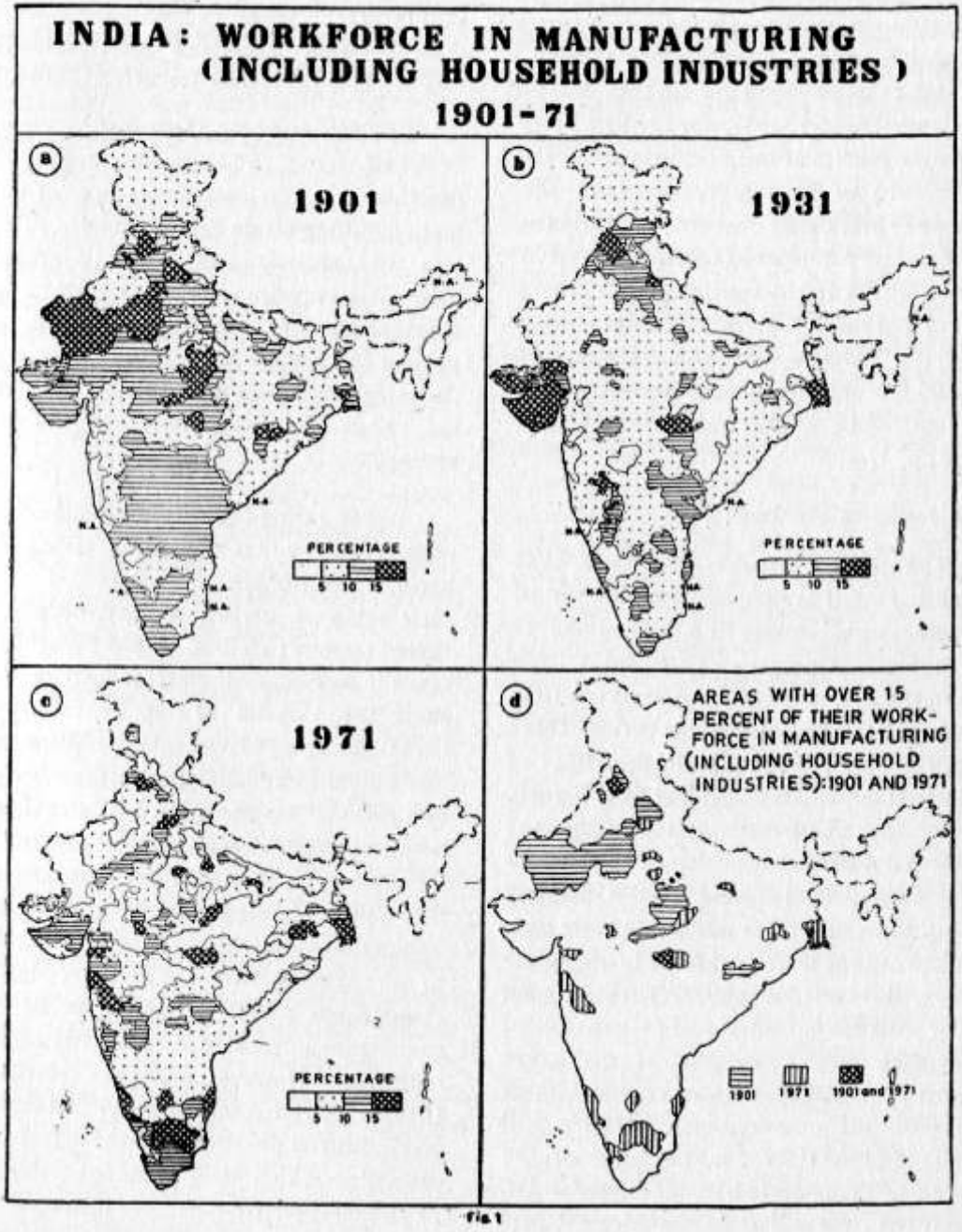
INDIA: WORKFORCE IN MANUFACTURING
(INCLUDING HOUSEHOLD INDUSTRIES)
1901-71
a
1901
b
1931
c
1971
d
AREAS WITH OVER 15 PERCENT OF THEIR WORK-FORCE IN MANUFACTURING (INCLUDING HOUSEHOLD INDUSTRIES): 1901 AND 1971
PERCENTAGE
5 10 15
1901
1971
1901 and 1971
N.A.

Fig 1

teenth century. Other industries were connected mainly with processing of agricultural resources, such as rice milling, timber sawing, lac processing and leather tanning, the latter being localized in the Madras Presidency (Anstey, 1931, pp. 207-93). Thus the major centres of manufacturing in India at the turn of the century were : (a) the Bombay Presidency where two cities—Bombay and Ahmedabad together had 100 cotton mills in 1894-95 out of the country's total of 144 mills, and (b) Calcutta where the jute industry was concentrated. In 1894-95, 26 out of the country's total of 29 jute mills were located here (Gadgil 1971, pp. 77-79).

Manufacturing Workers : 1931

The years between 1901 and 1931 witnessed a fall in the absolute number of manufacturing workers from 7.5 million to 6.8 million. This was accompanied by a fall in the pecentage of these workers from nearly ten to eight during this period. There was, however, some spatial dispersion of industrial activity, as is evident from Fig. 1b. While the lead was maintained by the industrial districts of Bombay and Calcutta Presidencies, Punjab and a few princely states, some new areas which had more than ten per cent of their workforce in manufacturing, also emerged in 1931. These included a few districts in central and eastern United Provinces and a number of districts in Madras Presidency. However, over large parts of the country, manufacturing still employed less than five per cent of the workers. This could be said, in particular, about the North-Eastern region, northern United Provinces, Bihar and Bengal, and most of the districts in Orissa. The percentage of districts with less than 10 per cent of their workers in manufacturing increased from 54.64 per cent in 1901 to 75.41 per cent in 1931. There was no district where manufacturing accounted for more than 30 per cent of the male workers (Table 1).

By 1931, however, there was a change in the structure of the manufacturing sector in the form of the emergence of units manufacturing crude capital goods. There was an expansion of some consumer-oriented industries also. Despite these developments, the industrial sector did not expand fast enough to absorb workers from declining indigenous manufacture, including the urban handicraftsman and the rural artisan.

It was during the second decade of the present century that industries received some boost. The British were forced to alter their policy of earlier neglect because of three reasons : (i) the World War I had made it necessary to start industries here since the U-boats of the Central powers made the free movement of Allied cargo boats almost impossible; (ii) it was essential to get the co-operation of the Indian bourgeoise to maintain political stability in the sub-continent ; and (iii) foreign competitors were firmly establishing their hold on the Indian market. These factors lead to the appointment of the Indian Industrial Commission in 1916. The report of this commission advocated active assistance to industries. However, under the reforms of 1919, industry became a provincial subject and industrial development was left to the provinces which they were not technically or financially equipped to manage. The tariff policy adopted by the Government also had little influence because effective protection was granted to very few

industries and new cases for protection took a long time to be processed. The hallmark of the tariff policy was Imperial Preference wherein duties on British goods were lowered while those on products of other countries were increased. As a result, there was only a limited diversification of the industrial structure. In 1931, the only producer goods manufactured in the country were steel and cement. The important consumer goods industries were sugar, matches and paper. To a limited extent, industries dispersed outside Calcutta and Bombay. The cotton textile industry was an important element in this diffusion. It spread to Delhi, United Provinces and Madras. This was made possible by the relatively cheap labour at the new centres, the development of hydro-electric power especially in south India, and the creation of local demand as a result of tariff protection (Bagchi, 1972, pp. 432-36).

Manufacturing Workers : 1971

In 1971, despite two decades of planning since 1951, the manufacturing sector employed only 9.33 per cent of the male workforce. In absolute terms, of course, this represented a doubling of the manpower employed in this sector in 1931.

The analysis of data for 1971 indicates that the spatial pattern of manufacturing workers had persisted by and large (Fig. 1c). Some change was also noticeable. The enclaves of industrial development in British India, namely Bombay, Calcutta, Delhi and Madras, had become regions of industrial concentration. In western India, besides Bombay, other districts like Poona, Nasik, Thana, Ahmedabad, Vadodara, Valsad and Surat recorded over 10 per cent of their workforce in manufacturing. Similarly, new areas of industrial activity had come up around Madras (Chingleput, Salem, Coimbatore and North Arcot), Calcutta (Nadia, Twenty-Four Parganas, Howrah, Hooghly and Burdwan) and Delhi (Gurgaon and Meerut).

Other notable newly industrialized areas were Gujarat, Punjab, western parts of Tamil Nadu and adjoining parts of Kerala. Tamil Nadu and Kearla owe their growing importance to hydroelectricity and an expanding internal market. Gujarat has traditionally been an important trading area as it lies at the convergence of land routes from Rajasthan and Delhi. The trading community here provided the entrepreneurship for the cotton textile industry at the beginning of the present century. In Punjab, a flourishing agricultural community provided both the raw materials and market for industrial products and led to a proliferation of small scale industries.

Regions of secondary importance were Mysore and Andhra Pradesh. The setting up of factories and training centres here by the government had generated a pool of skilled labour, especially in Bangalore and Hyderabad (Karan, 1964, pp. 336-54). It is evident from Map that the areas of large-scale government investment in steel were not successful in transforming their hinterlands into industrially prosperous areas. Dhanbad, Singhbhum and Sundargarh are surrounded by industrially backward districts. Industrial employment in eastern Madhya Pradesh, northern parts of Uttar Pardesh, Bihar and Bengal, and the North-Eastern region is negligible. A significant factor is the decline in the

proportion of manufacturing workers in Rajasthan. This was largely due to the setback which the household industries, such as weaving and leather processing, suffered in the face of growing competition from modern large scale industry.

A Comparative Analysis : 1901, 1931 and 1971.

Table 1, showing the distribution of districts by percentage of male workers engaged in manufacturing, indicates that the proportion of districts having less than 5 per cent of their workers in manufacturing increased from about 15 per cent in 1901 to 38 per cent in 1971. On the other hand, the percentage of districts with more than 20 per cent of their male workers in manufacturing increased from 2.5 to 3.95 per cent. Though this is a marginal increase yet it indicates that the number of districts emerging as industrial centres is growing.

In Table 2 districtwise location quotients are analysed in order to gauge the inequalities in the distribution of industrial activity. It reveals that there has been a small decline in the percentage of male workers in the manufacturing sector from 9.77 to 9.33 and that the percentage of districts above the national average decreased from nearly 47 to about 28. This shows that first, the proportion of workers in this sector has remained almost constant, and secondly that fewer districts have a location quotient exceeding 1. However, as in Table 1, there is an indication of an increase in the percentage of districts in the two highest classes from just over 3 per cent in 1901 to 5 per cent in 1971.

Table 2

INDIA : Distribution of Districts According to Location Quotients of Male Workers Engaged in Manufacturing, 1901—1971

Location quotients	Percentage of districts		
	1901	1931	1971
Below 0.50	14.64	19.60	33.24
0.50 — 0.99	38.57	39.20	38.59
1.00 — 1.49	34.64	27.91	16.62
1.50 — 1.99	8.93	5.98	6.48
2.00 — 2.49	1.79	4.98	3.10
2.50 and above	1.43	2.33	1.97
1.00 and above	46.79	41.20	28.17
Per cent workers engaged in manufacturing in India	9.77	8.15	9.33

Source : Derived from Table XV, Census of India 1901 ; Table X, Census of India 1931 ; and Table BIV Part A, Census of India 1971. This table is available in the individual volumes of each of the provinces/states.

Note : Percentages have been calculated in terms of the total number of districts in that particular year.

Districts with 15 per cent or more of their male workforce in manufacturing made only a very small proportion in both 1901 and 1971. The most prominent among these were the districts with the four largest metropolitan cities (Map 1d). The main difference in 1971 was the increasing industrial activity in districts adjacent to these four metropolitan centres, and the emergence of pockets of substantial manufacturing activity in south India.

The preceding analysis indicates that the share of the manufacturing sector has not changed appreciably during the period

under investigation. This may partly be attributed to the nature of the data available which related both to household and non-household industry. If only modern factory industry was taken into consideration the picture would have been quite different. It is, however, evident from the above analysis that this sector has not been able to provide employment to the rapidly increasing labour force in the country to the same extent as in the developed countries, where it accounts for a much larger share of the workforce.

In addition, there is evidence to prove that while the share of the workforce engaged in manufacturing did not change, there has been considerable change in the structure of the sector (Table 3). Thus, while in 1901, the percentage of manufacturing workers engaged in producing capital goods was almost negligible at 0.19, in 1971 it had risen to 5.68. The share of workers engaged in the manufacture of transport equipment also increased from 0.33 per cent to 2.66 per cent (Khurana, 1985, p. 200)

Conclusion

This district level analysis of male workers in manufacturing reveals that industrial activity during 1901-71 has not only remained insignificant over large parts of the country but also the spatial pattern of manufacturing persisted, by and large. In 1901, the, areas with a relatively high percentage of manufacturing workers included the four districts coinciding with the metropolitan cities of Bombay, Calcutta, Madras and Delhi, some among the princely states, and a few scattered districts. Areas where manufacturing activity was insignificant included the North-Eastern region, northern parts of Bengal, Bihar and

Table 3

INDIA : Distribution of Workers in Industries Producing Capital, Intermediate and Consumer Goods and Transport Equipment 1901, 1931 and 1971

Year	Percentage of Workers engaged in the manufacture of			
	capital goods	intermediate goods	consumer goods	transport equipment
1901	0.19	17.16	82.32	0.33
1931	*	19.44	80.29	0.27
1971	5.68	16.47	75.19	2.66

Source : Derived from Table XV, Census of India 1901 ; Table X, Census of India 1931, and Table BIV Part A, Census of India 1971.

Note : Percentages are in terms of total manufacturing workers

*Separate figures for capital and intermediate goods are not available for 1931.

Uttar Pradesh, and most of the districts in the southwestern part of the Bombay Presidency. In 1971, the spatial pattern was about the same, except for the emergence of some new areas of industrial activity and the decline of certain others. The four metropolitan centres, along with the other pockets of industrial activity, had expanded to form regions of industrial progress. These included : (i) The Bombay-Gujarat region ; (ii) The Calcutta region ; (iii) The Madras-Bangalore-Kerala region ; and (iv) The Delhi-Punjab region. Another important area of manufacturing activity, which had emerged by 1971, was the Chota Nagpur region. On the other hand, manufacturing activity showed a decline in eastern Madhya Pradesh, northern parts of Uttar Pradesh, Bihar and West Bengal, and the North-Eastern Region. Here the traditional household industry had suffered to a high degree.

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DEMOGRAPHIC DEVELOPMENT IN A DEVELOPING ECONOMY : A CASE STUDY OF UTTAR PRADESH

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Patterns of and trends in demographic development in the Indian state of Uttar Pradesh have been analysed in this paper. Indices of urbanisation, literacy and occupational structure were used for this purpose. Their aggregate index represented the level of demographic development. Data were used by individual tahsils in 1971 and 1981. The major contribution of this paper lies in laying bare the regional disparities in demographic development at the micro-scale. The demographic development showed a gradient from the west to the east in general. It was at its lowest in the poverty trough somewhat to the right of the middle. A close association between the demographic and economic development was indicated.

The demographic development is an integral component of the overall development in a country or a region. The present paper attempts to analyse the patterns of demographic development in Uttar Pradesh, a developing state of the Indian Union, with wide spatial variations in its physical landscape, resource - population balance, socio-historical configuration and politico-administrative structure. It also tests the following hypotheses :

(a) The spatial pattern of demographic development in a developing state is greatly influenced by its history. Regional disparities widen with additional development inputs because different regions/social groups respond differently.

(b) Demographic development is related to over-all development. A high positive correlation between its level and that of agricultural and industrial/ urban development can be envisaged.

(c) At a low level of development, physical landscape of the region exercises a greater influence on the pattern of demographic development.

Methodology

Demographic development has been recognised as the core of development which in the ultimate analysis is nothing but betterment of human quality and life. That is why it attracted the attention of several scholars (Schwartzberg, 1962; Harvey and Bhardwaj, 1973; Social Statistics Division of United Nations, 1977; Rao, 1977; and Gosal and Krishan, 1984) for its analysis in spatio-temporal frame-work. In the present paper, the authors

have made an analysis of the demographic development of Uttar Pradesh in terms of pattern of life, as reflected in proportion of its urban and rural populations; quality of population, as manifested in its literacy rates; and level of economic dynamism as suggested by its occupational structure.[1]

Table 1 lists the indicators/components of demographic development which have been used in the analysis of 1971 and 1981 census data of Uttar Pradesh by tahsils. The relevant data were processed in the following manner :

Table 1

Uttar Pradesh : Indicators of Demographic Development

Subset	Indicators/components and composite indices
Urbanisation	Urban population as per cent of total population
	Population in 20,000+towns as per cent of total population
	Towns per thousand square kilometres.
	Towns per lakh population in rural area
	Index of urbanisation
Literacy	Literates as per cent of total population.
	Literate males as per cent of total male population.
	Literate females as per cent of total female population.
	Rural literates as per cent of population in rural areas.
	Urban literates as per cent of urban population.
	Scheduled caste literates as per cent of scheduled caste population.
	Non-scheduled caste literates as per cent of non-scheduled caste population.
	Index of differential in literacy.
	Index of literacy
Occupational Structure	Workers in non-agricultural activities as per cent of total workers
	Workers in non-agricultural activities as per cent of total workers in rural areas.
	Workers in household activities as per cent of total workers
	Workers in other activities as per cent of total workers
	Index of occupational structure
	Aggregate Index of Demographic. Development

1. Uttar Pradesh was divided into 12 divisions, 56 districts and 242 tahsils in 1981. The tahsils are a subdivision of the districts. On an average, a district is composed of 4.35 tahsils.

1. All tahsils were ranked in respect of each component/indicator of demographic development. The ranks were summed up separately for each tahsil and were divided by the number of indicators included in the component. The purpose was to discern the value of each component score termed as 'index of urbanisation', 'index of literacy' and 'index of occupational structure'.

2. Again all tahsils were ranked in respect of each component score and ranks were summed up separately for each tahsil and were divided by three, corresponding to the number of component indices included. This was meant to discern the 'aggregate of demographic development'.

3. For the cartographic representation the range between top and bottom index values was calculated and divided by six to find out interval for the six fold categorisation.

Each tahsil was assigned to one of six categories and mapped accordingly. Evidently the scheme is based on multiple level 'check and balance' principle where varying number of indicators in a component would have no undesirable bearing on aggregate index of demographic development. Its main achievement lies in exposing spatial pattern of demographic development not only in aggregate terms but also in components.

Discussion

It is noteworthy that regional differential in different components of demographic development is decreasing in the state (Table 2). The decrease is more pronounced in case of pattern of life, as manifested by urbanisation. The differential in urban population as per cent of total population and towns per 1,000 km² were 12.68 and 6.64 respectively in 1971. It came down to 8.14 and 5 69 in 1981. The regional differential in population in towns 20,000+ population as per cent of total population was infinite in 1971 as more than half of the tahsils were without large towns. It reached to measurement limits (25.31) in 1981 with the emergence of large towns in more than 50 per cent tahsils.

However, the trend of differential was mixed in quality of population as suggested by differential in different literacy rates and in economic dynamism as reflected in indicators of occupational structure. Regional disparities in total literacy, male literacy, female literacy, and scheduled caste literacy showed a decreasing tendency during 1971-81 decade. But disparity in rural literacy increased from 1.42 in 1971 to 1.65 in 1981. Similarly regional differential in overall economic diversification as manifested by workers in non-agricultural activities as per cent of total workers decreased from 5.50 in 1971 to 4.29 in 1981. But disparity in workers in non-agricultural activities as per cent of workers in rural areas increased from 3.66 in 1971 to 3.95 1981.

In the colonial period, development activities were mostly nodal, located in urban centres and were confined to a few enclaves producing those goods which were required by the colonial masters. In post-Independence period, development spread from colonial nodes and enclaves to other areas under the various plans. But the spread was more rapid in the vicinity of old

Table 2

Uttar Pradesh : A Comparative Picture of Regional Disparities in Demographic Development, 1971-81

Sl. No.	Indicators	Disparity index+ 1971	1981
1.	Urban population as per cent of total population	12.68	8.14
2.	Population in 20,000+towns as per cent of total population	∝	25.31
3.	Towns per thousand square kilometres	6.64	5.69
4.	Literates as per cent of total population	1.94	1.74
5.	Literate males as per cent of total males	1.41	1.23
6.	Literate females as per cent of total females	4.17	3.47
7.	Rural literates as per cent of rural population	1.42	1.65
8.	Scheduled caste literates as per cent of scheduled caste population*	2.66	2.27
9.	Workers in non-agricultural activities as per cent of total workers.	5.50	4.29
10.	Workers in non-agricultural activities as per cent of workers in rural areas	3.66	3.95

\+ Disparity index has been calculated by the formula : value of the tahsil at top position minus value of the tahsil at bottom position divided by value of the tahsil at medium position.

* Scheduled caste literates and scheduled caste population also include scheduled tribe literates and scheduled tribe population which was barely 0.21 per cent of the total population of Uttar Pradesh in 1981. Scheduled castes made 21.16 per cent of the total population.

colonial nodes and enclaves as these already had considerable infra-structure. The regions which suffered neglect could not come up. The regional differentials in rural development were noted as having increased in spite of the overall decrease in regional disparities.

Components of Demographic Development

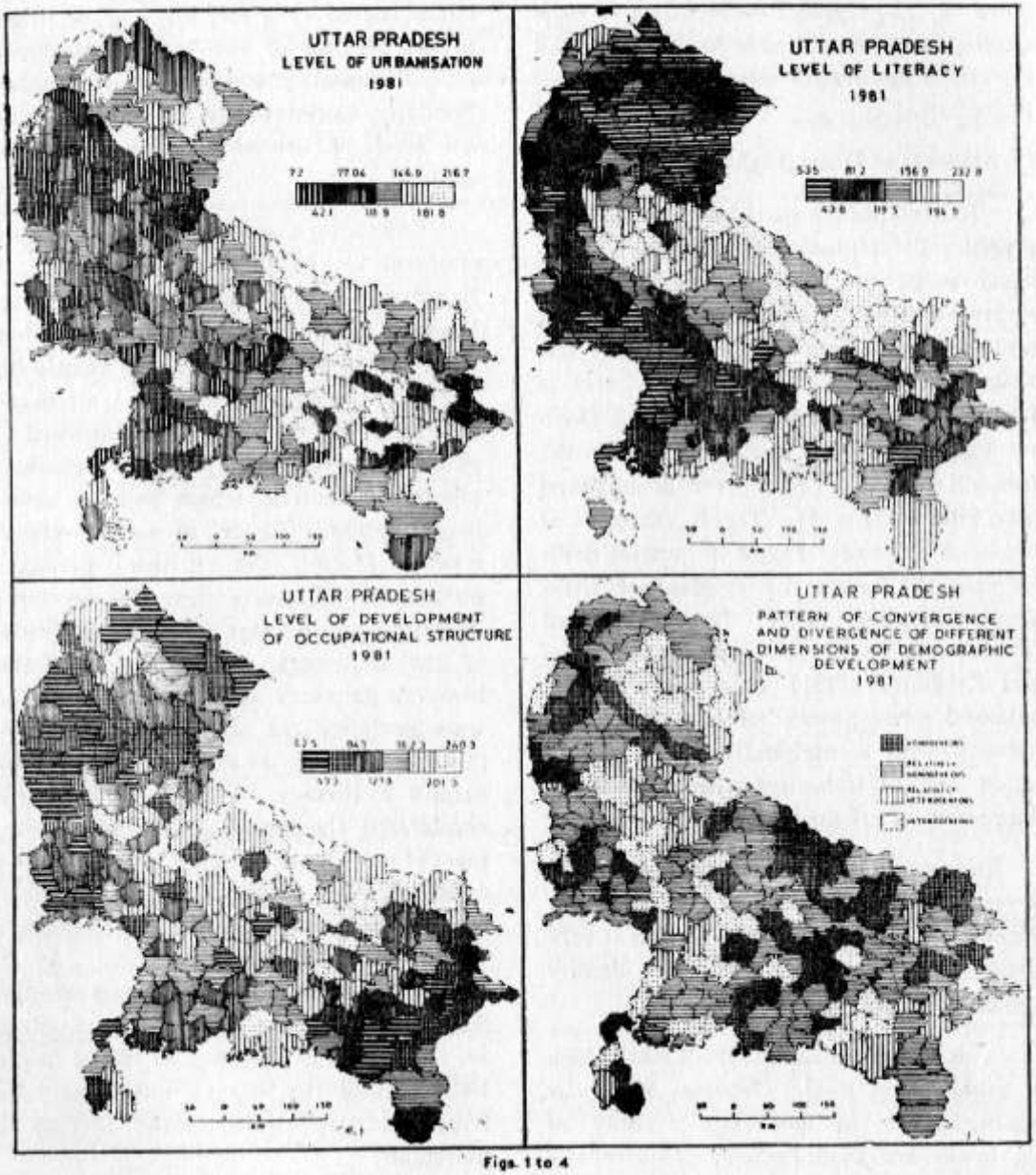
To visualise the spatial pattern of demographic development an analysis of its every component will be of great help. In respect of urbanisation; the most developed realm makes an inverted 'V' shaped belt with apex in Dehra Dun; its one arm is formed by the Upper Ganga-Yamuna Doab reaching up to Agra and the other by the foot-hill zone covering most of Rohilkhand upto Pilibhit (Fig. 1). This is the zone of balanced agricultural and industrial development, the 'prosperity crescent of Uttar Pradesh' (Dubey, 1981). The high level of urbanisation in this area corroborates Rana and Krishan's (1981) observation that a balanced development of agriculture and industry, with a combination of decentralisation and centralisation effects, promotes the process of urbanisation.

In just contrast, an elongated belt of poverty trough lies in the Central Uttar Pradesh.[2] The level of urbanisation is very low in this area of high population density and stagnant economy.

This apart, all *sadar* tahsils stand high in urbanisation level. Among *non-sadar* tahsils, those in immediate vicinity of big towns are more lagging. This reflects a negative impact of big towns on urbanisation in their immediate surrounding areas. Kanpur Dehat, a newly created district, is characterised by a very low level of urbanisation because of the suction mechanism of Kanpur metropolitan economy. Similarly Lucknow has a retarding impact on level of urbanisation in its primary umland.

The pattern of urbanisation does not conform to the literacy pattern (Fig. 2). Kumaon and Garhwal, the Middle Ganga-Yamuna Doab and Western Bundelkhand have conspicuously recorded relatively high levels of literacy. Uttarakhand, an area of dominant Hindu culture, renowned as abode of gods, comprises a series of pilgrimage centres where people have a long tradition of study of sacred religious books. During the British period, a number of hill resorts were also developed. Thereby, people came in a closer contact of the Britishers. Renowned for their bravery, gallantry and faithfulness, they were preferred in armed services. All this exposed them to external environments, helpful to literacy. These factors together accelerated the process of literacy development at an early stage. In the post-Independence period, a large number of schools was opened. Almost every large village in the area now has a primary school. In the Middle Ganga-Yamuna Doab and Western Bundelkhand, where almost all the villages are large ones, availability of school facility has enhanced the literacy in general, and female and scheduled caste literacy in particular.

2. Dubey (1981) found an elongated belt of acute under-development running vertically down through central Uttar Pradesh where the gradient of positive human forces in the west and of favourable physical conditions in the east sloped to their lowest. He termed it as 'poverty trough'.


UTTAR PRADESH
LEVEL OF URBANISATION
1981
UTTAR PRADESH
LEVEL OF LITERACY
1981
UTTAR PRADESH
LEVEL OF DEVELOPMENT
OF OCCUPATIONAL STRUCTURE
1981
UTTAR PRADESH
PATTERN OF CONVERGENCE
AND DIVERGENCE OF DIFFERENT
DIMENSIONS OF DEMOGRAPHIC
DEVELOPMENT
1981

Figs. 1 to 4

Moderate literacy development took place in the Upper Ganga-Yamuna Doab and Purvanchal. In both the areas, male literacy is high but the causes are different. In the Upper Ganga-Yamuna Doab, high male literacy is the consequence of economic prosperity. In Purvanchal, it is the consequence of economic distress. As Purvanchal is an area of high population pressure on the land, resulting in small agricultural holdings, agriculture has little scope for absorption of the labour force. Most of the workers are agricultural labourers. The people of the area, particularly the upper castes, do not like to work as agricultural labourers as a matter of cultural tradition. They prefer to educate their male children who could be breadearners for the family. This observation is confirmed by the pattern of female, scheduled caste and rural literacy rates, which are higher in the Upper Ganga-Yamuna Doab but lower in Purvanchal, where female children are still subjected to neglect and are seldom sent to the school.

Areas which were under the native rule such as Tehri Garhwal in Uttarakhand, Rampur in Rohilkhand and Avadh, are at the lowest position in literacy. This refers to the double deleterious effect of exploitation during colonial period. The British squeezed the native rulers who, in turn, exploited their own people. Whatever meagre resources were left with native rulers, they spent these more on their sensual pleasures rather for the welfare of the people.

A diversified occupational structure in favour of secondary and tertiary activities manifests the economic dynamism of the people in an area (Clark, 1957; Kuznets, 1971; Schwartzberg, 1969; and Chenery and Syrquin, 1975). Its patterns differed from those of literacy in Uttar Pradesh. Here three belts of diversified occupational structure are distinct; (i) the widest one in the Upper Ganga-Yamuna Doab, Foothill zone of Uttarakhand and Rohilkhand, associated with balanced agricultural and industrial development, (ii) a narrow belt in Purvanchal, starting from Mirzapur reaching up to Ballia associated with traditional household industries, and (iii) a narrow belt on the northern periphery of Uttarakhand, where quite many workers are engaged in livestock rearing and household industries.

The belts of highly diversified occupational structure are girdled by a wide zone of moderately diversified occupational structural area (Fig. 3). Here the factors associated with diversification of economy are less intense. These areas include Middle Ganga-Yamuna Doab, Purvanchal and Central Kumaon.

The areas of least occupational dynamism cover the whole of Avadh (excepting *sadar* tahsils), Tehri Garhwal, and northern part of the Saryupar Plain. These suffered neglect during colonial period, and did not receive adequate attention during the early planning period.

Structure of Demographic Development

The development showed meaningful patterns not only in spatial spread but also in development structure as manifested by grouping of tahsils by level and structure of demographic development (Table 3). Out of 242 tahsils 56 had homogeneous demographic development structure being within the same quartile position in each dimension;

Table 3

Uttar Pradesh : Grouping of Tahsils by Level and Structure of Demographic Development, 1981

Level of demographic development	Structure of demographic development				Total
	Homo-geneous	Relatively homogeneous	Relatively heterogeneous	Heterogeneous	
1st quartile	22	33	05	00	60
2nd quartile	07	22	08	24	61
3rd quartile	08	17	15	21	61
4th quartile	19	35	05	01	60
TOTAL	56	107	33	46	242

107 had relatively homogeneous, being within one quartile in two dimensions with deviation of one quartile in one dimension; 33 had relatively heterogeneous, being within one quartile in two dimensions with deviation of two quartiles in one dimension, and 46 tahsils had heterogeneous being in separate quartile position in each dimension. Thus, the homogeneity was the marked feature of majority of tahsils ; it was high at low level as well as high level of demographic development and slightly scattered within the middle position of development, signifying that all the dimensions of development did not move at an equal pace.

Fig. 4 showing the spatial pattern of convergence and divergence of the different dimensions of demographic development is highly revealing. It shows that the whole of Uttar Pradesh presents a picture of systematic mosaic of long strips and wide patches of homogeneous, relatively homogeneous, and heterogeneous demographic development areas. In the remote north in Mountainous Uttarakhand Kumaon and that part of Garhwal which was under direct British rule have relatively heterogeneous to heterogeneous demographic development structure; ahead in literacy, moderate in level of occupational structure and low in level of urbanisation. Tehri Garhwal, formerly under a native ruler, is backward in all dimensions but slightly better in literacy which is a marked characteristic of the whole of Uttarakhand. Then comes the foothill zone mainly the Tarai, which has witnessed rapid over-all development during the postcolonial period, resulting into homogeneous development structure.

A slightly different situation exists in the Ganga Plain. In most of the western tahsils located in the Upper Ganga-Yamuna Doab, literacy development is not commensurate with the level of urbanisation and occupational dynamism. This zone of relatively homogeneous demographic development structure is girdled by a wide zone of heterogeneous structure covering most of Rohilkhand and the Middle Ganga-Yamuna Doab. Rohilkhand, an area of

relatively high Muslim concentration, is far behind in literacy, particularly female literacy. The Middle Ganga-Yamuna Doab, however, is far ahead in literacy as compared to the other components of demographic development. Further east to this heterogeneous structure zone lie the poor areas of Avadh and the Lower Ganga-Yamuna Doab sloping towards the 'poverty trough' which is underdeveloped in every dimension of development. East of the 'poverty trough' in northern Purvanchal is a zone of relatively homogeneous demographic development and the southern part has heterogeneous or relatively heterogeneous demographic development structure; better in economic dynamism, backward in urbanisation and worst in quality of life as reflected in low literacy rates. Lastly, in the western part of the plateau region of Bundelkhand, recent economic spurt has produced heterogeneous demographic development structure but in eastern part of stagnant economy, a low level homogeneity still persists. It reveals that all dimensions of demographic development do not respond equally to economic development.

Levels of Demographic Development

An aggregate picture of over-all demographic development has been discerned by the combination of indices of pattern of life, quality of population, and level of economic dynamism (Fig 5). To obtain a spatial picture of demographic development in the state, tahsils were grouped into developed, developing and under - developed. 67 tahsils belonging to the first two top categories of the six-fold grouping based on aggregate scores of demographic development were deemed as developed, another 67 tahsils falling in the middle two categories as developing, and the remaining 108 tahsils in bottom two categories as under-developed. The intensity of demographic development impulses was most marked in developed areas. They can be adopted as a model for demographic development planning of the developing and underdeveloped areas.

(a) *Developed areas*

As already noted, 67 tahsils were at a high level of demographic development. Most of them are located in an extensive zone covering the Upper and Middle Ganga-Yamuna Doab, foot-hill tract of Uttarakhand and western Rohilkhand. This is the zone of balanced agricultural and industrial development. The other two minor belts of developed demographic development include Purvanchal from Gyanpur to Ghazipur and the northern periphery of Uttarakhand. Besides, there are some nodal localities associated with the divisional head - quarters and industrial / commercial centres which are marked for a high level of demographic development.

(b) *Developing areas*

Three areas fall in this group. The first covers western Rohilkhand, and the Middle Ganga-Yamuna Doab and Bundelkhand. The demographic development structure is not identical throughout. Rohilkhand is ahead in econmic dynamism and urbanisation but has moderate to low literacy rates. The Ganga—Yamuna Doab and Bundelkhand segments are very high in literacy but moderate in occupational structure and moderate to low in urbanisation.

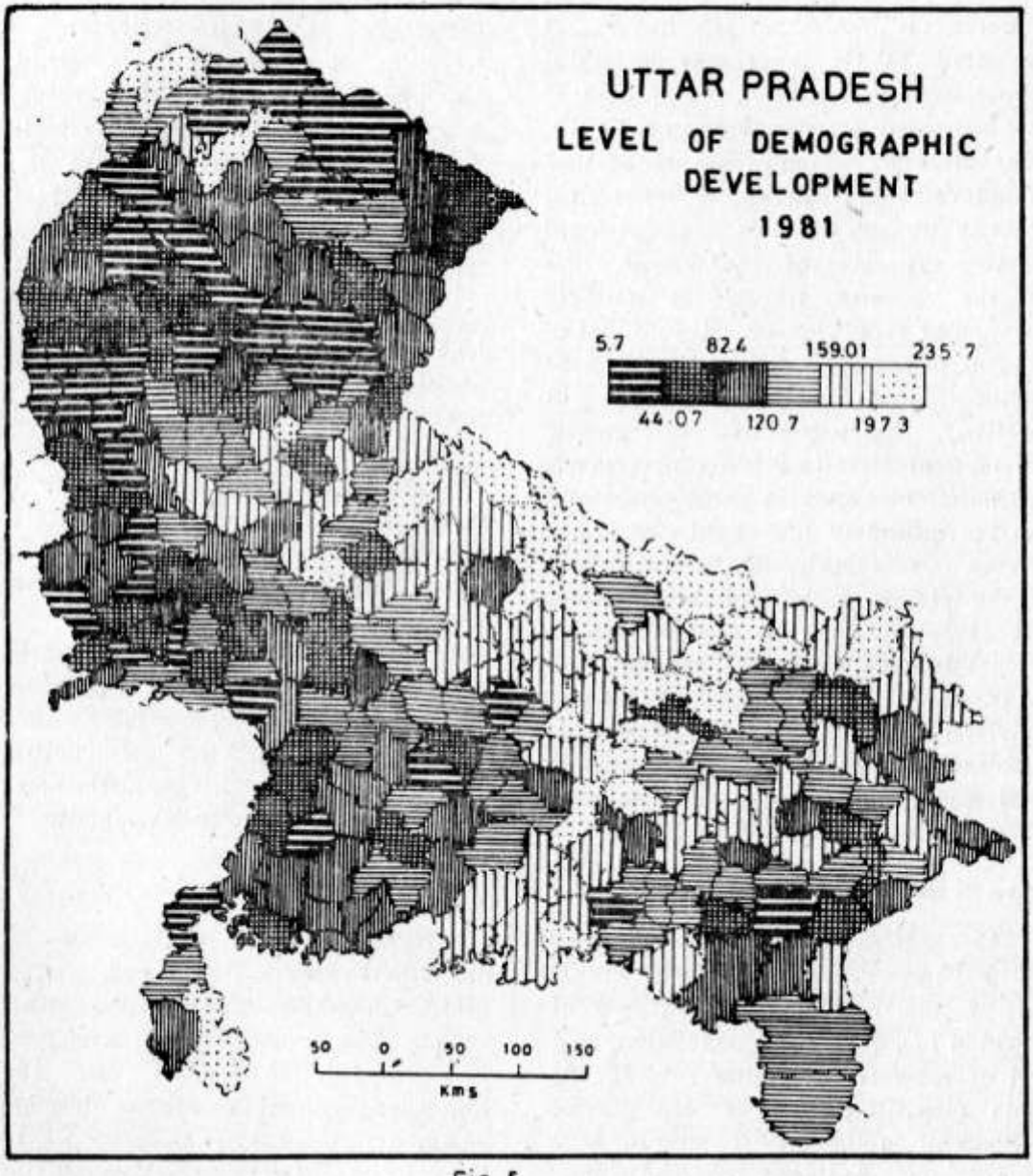

UTTAR PRADESH
LEVEL OF DEMOGRAPHIC
DEVELOPMENT
1981
5.7
82.4
159.01
235.7
44.07
120.7
197.3
50 0 50 100 150
Kms

Fig. 5

The second developing zone of demographic development is located in the middle part of Uttarakhand. It separates two areas of high demographic development of Uttarakhand; one on the northern periphery and the other in foot-hill zone. Its demographic development structure is unusual very high in literacy, moderate in occupational structure and low in urbanisation.

The third developing area covers Mirzapur and most of Purvanchal, excluding the Tarai belt of the Saryupar Plain. This is a zone of strong physical resource base. It had prosperous agriculture and a variety of household industries before the advent of colonial rule. With the colonial onslaught on household industries, the artisans were forced to be agricultural labourers. Pressure on agricultural resources was intensified.

(c) *Underdeveloped areas*

108 tahsils at low level of demographic development gives shape to the 'poverty trough' of Uttar Pradesh. It starts from Nighashan (Kheri District) in north reaching up to Karwi (Banda District) in south. This zone of demographic underdevelopment is wider on the northern periphery of the state covering most the *Tarai* with its notorious unhealthy climatic conditions (Singh, 1965). It is narrowest in the middle part where the two *sadar* tahsils of Rae-Bareli and Pratapgarh are located. Tehri Garhwal, Rampur and larger part of Avadh are the other areas of low demographic development. These were under the native rulers. This confirms the double deleterious effect of colonial exploitation in the areas of native princely states.

Conclusion and Planning Implications

The foregoing analysis reveals that regional disparities in most of the indices of demographic development are decreasing although Uttar Pradesh is still a developing State.

This needs an elaborate analysis of longitudinal data. It is suggested that regional disparities in developing areas are a hangover of colonial structure. Regional disparities accentuate through colonial exploitation. Only select industrial, administrative commercial nodes and favoured areas develop. Vast areas remain neglected. With the beginning of development planning in the post colonial period, regional disparities start declining.

Despite high correlation among the different indices of demographic development urbanisation was found as the most representative in the case of Uttar Pradesh. Here Purvanchal is an area of distress literacy, and Uttarakhand distress occupational diversification but their prevailing condition is not reflected in these indicators. Likewise, in Ganga-Yamuna Doab, the literacy development is not commensurate with the high level of economic dynamism and urb nisation. In this light, a greater emphasis on economic dynamism in Purvanchal and Uttarakhand and higher stress on literacy in the Upper Ganga-Yamuna Doab and Rohilkhand is called for.

Demographically, developed areas display diverse physical conditions. These inlude the Upper Ganga-Yamuna Doab, mountainous Uttarakhand, and the western part of Bundelkhand Plateau. Thus, the physical background of an area is not all that inportant in influencing the pattern

of domographic development. The low development level of Tehri Garhwal in Uttarakhand, of Rampur in Rohilkhand, and of Avadh confirms a double deleterious effect of colonial exploitation in the former areas of native rule. The colonial masters squeezed the rulers and the rulers, in turn, exploited their own people.

Broadly speaking, demographic development decreases from west to east. It reaches at its lowest in 'poverty trough'. A close association with economic development is noticed in this case. It shows that demographic development is related to over-all development, particularly economic growth. Also the foot-loose and sophisticated industries have little impact on regional economic development. This is indicated by the examples of Rae Bareli and Amethi, lying in the 'poverty trough' of Uttar Pradesh. This is an area marked by a very low level of demographic development.

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PATTERNS OF TRIBAL LITERACY IN VIDARBHA

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This paper identifies and explains spatial patterns of tribal literacy in Vidarbha region of Maharashtra state in India. Tribal literacy rate (29.49 per cent) here is significantly lower than the literacy rate of total population (46 per cent). The spatial patterns of total and tribal literacy correspond with each other. Tribal urban literacy (54.69 per cent) is much higher than tribal rural literacy (25.47 per cent points). Urban-rural differential in literacy is wider for tribal (29.22 per cent points) than for total population (22.10 per cent points). Tribal male literacy rate (42.26 per cent) is more than double of the female literacy rate (17.65 per cent) Tribal female literacy in rural areas is extremely low (13.80 per cent).

The scheduled tribe population in India is characterized by very low level of literacy. The disparity between tribal (16.35 per cent) and total literacy (36.17 per cent) rates is more pronounced in regions where tribals constitute a large bulk of total population.

Several studies in the past have been devoted to literacy patterns on all-India level (Gosal, 1964 and 1967; Tirtha, 1966; Vaidyanathan, 1972; Krishan and Shyam, 1977). Some confine their analysis to individual states, such as Andhra Pradesh (Muker ji, 1968), Rajasthan (Sharma, 1968), Haryana (Krishan and Chandna, 1974), Uttar Pradesh (Siddique, 1977), and West Bengal (Dutta, 1982). Still others are restricted to Indian cities (Krishan and, Shyam, 1974 Singh, 1977 ; or a single district (Singh, 1979)

Though Vidarbha, the eastern part of Maharashtra state, has been covered in all India studies yet there is no separate detailed study on its literacy pattern. Regional studies on literacy pattern of the tribal population-the 'weaker' section of our society—are notably lacking. Hence this paper undertakes a comprehensive study of tribal literacy in Vidarbha and analyses its spatial patterns.

A 'literate' is defined by the census authorities as a person, who can, with understanding, do both-read and write-in any language. As the data on literacy are not available for each tribe separately, literacy is expressed as percentage of total 'scheduled tribe' population. Tahsil has been adopted as the basic unit for mapping and analysis (Fig. 1). Tribal literacy pattern is compared with that of total literacy. Scheduled caste-tribal gap in literacy, and urban-rural as well as male-female differentials in tribal literacy are identified. For explaining the spatial

pattern of tribal literacy, several socio-economic variables have been taken into consideration.

Distribution of Tribal Population.

Important 'scheduled tribes' in Vidarbha include Korku, Gond, Kolam, Andh, Pardhan, Pardhi, Bhaina, and Halba. They together (2,136,125 in 1981) constitute 14.89 per cent of Vidarbha's total population. The tribal population is concentrated in the eastern and southern parts of the region. In the western part their proportion is very low (below 5 per cent).

The proportion of tribal population at tahsil level ranges from mere 2.82 per cent (in Chikhli) to 74.42 per cent (in Melghat). The actual number of tribals in tahsils varies from 9955 (in Murtijapur to 176,860 in Nagpur.

Within this tremendous range, 21 tahsils with greater than the region's average tribal population size and tribal proportion were selected for calculating correlation co-efficients. These tahsils occupy 68.61 per cent of Vidarbha's area and 82.22 per cent of its tribal population. Included here are all the tahsils of Chandrapur, Bhandara, and Yavatmal districts. Adjacent to them, 4 tahsils of Nagpur and 2 of Wardha are also included.

Tribal population is predominantly rural. 86.26 per cent of Vidarbha's tribal population as compared to 73.90 per cent of its total population lives in villages. Scheduled tribes constitute 17.38 per cent of the rural and 7.38 per cent of the urban population in Vidarbha (Fig. 3). Entirely rural or lowly urbanized tahsils have large tribal population. However, some tahsils of the western part have low proportion of tribal population as well as low level of urbanization.

Tribal Literacy

The 1981 census records 0.63 million out of 2.14 million tribal population of Vidarbha as literate. Tribal literacy rate of 29.49 per cent is lower than total literacy rate of 46 per cent (Table 1). Though tribal literacy rate in Vidarbha is higher than the Indian average (16.35 per cent) yet it is lower than the tribal literacy rates of Kerala (31.79 per cent) or Nagaland (40 per cent).

Literacy is influenced by the size of tribal population. In order to eliminate this influence, the literacy rate for non-tribal population was separately calculated. It works out as 50.39 per cent. Thus, the disparity between the tribal and non-tribal literacy rates is wide.

Tribal literates comprise less than one-tenth (9.5 per cent) of Vidarbha's total literate population. The main handicaps to the education of the tribal people are their proverty, habitation in forests on inaccessible areas and large number of dialects they speak (NCERT, 1966). Majority of tribal population lives either in rural, hilly or forested tracts in complete or partial isolation. There are few points from where the civilisation influences can radiate into the abode of tribals. In the rainy season, tribal region is almost totally cut off from even the most elementary means of transport and communication. Traditionally they have been either secluded from the mainstream of social life.

Table 1

Vidarbha : Literacy Patterns of Tribal and Total Populations, 1981

	Literacy rates (per cent)		Standard deviation for tribal literacy rates
	Total population	Tribal population	
Average	46.01	29.49	9.41
Males	57.45	42.26	10.38
Females	33.29	17.65	8.94
Urban	62.35	54.69	6.69
Rural	40.25	25.47	7.82

Areal Pattern of Literacy

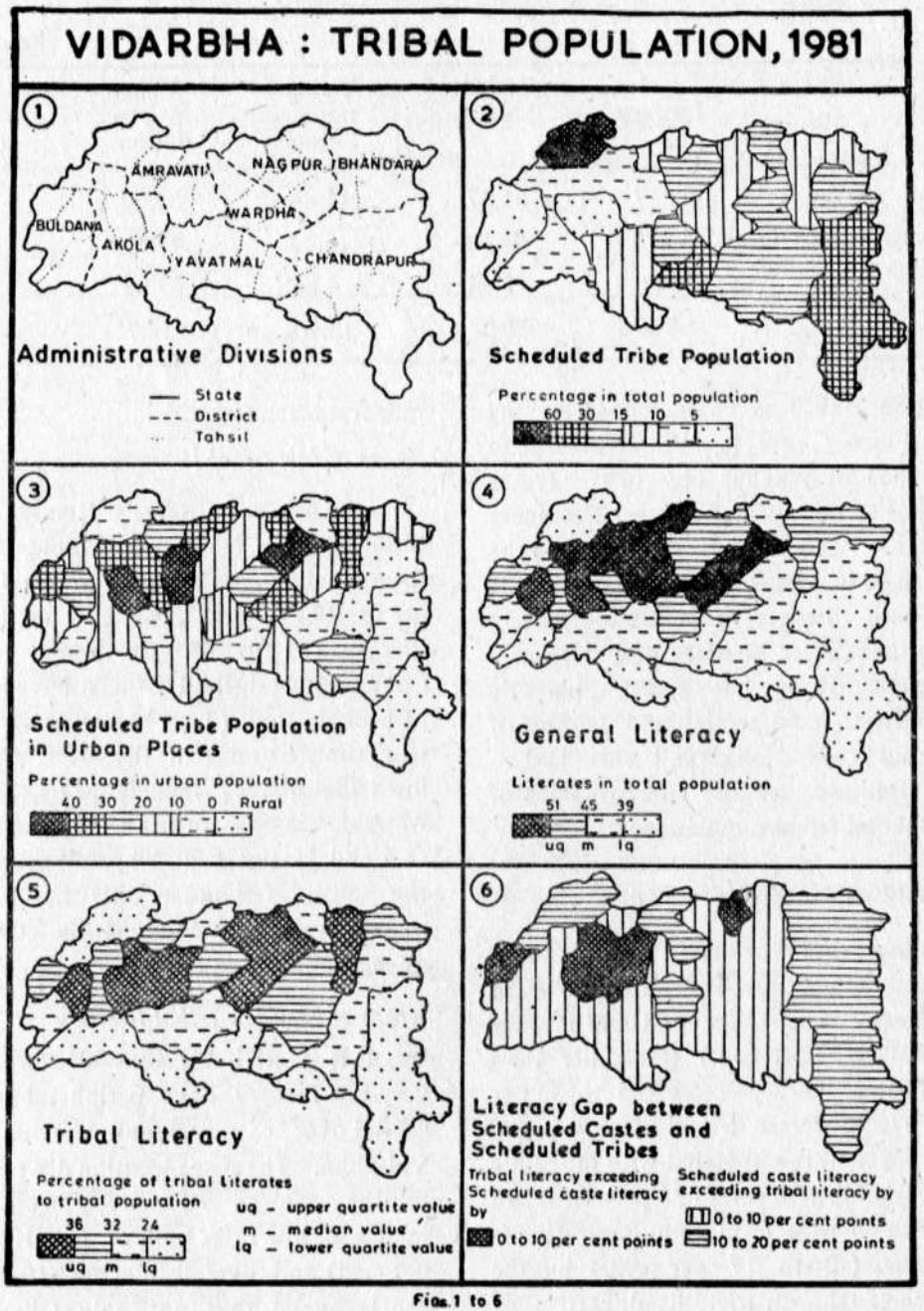
Literacy rates on tahsil level reveals-tremendous variations (Figs. 4 and 5). Though the inter-quartile range of total (11.82 per cent points) and tribal literacy (11.18 per cent points) rates is almost equal, the dispersion from the median is small for tribal population. The spatial patterns of overall and tribal literacy correspond with each other. To be precise, 25 tahsils out of 39 belong to common literacy categories.

Vidarbha has a relatively higher level of urbanization (26.1 per cent urban population) and a higher proportion of tribal population (14.89 per cent) than the Indian average (23.73 per cent urban and 7.76 per cent tribal). On the whole, Vidarbha is economically and socially backward. Its predominantly rural and tribal population exhibits almost total dependence on agriculture.

Workers dependent on agriculture constitute 73.82 per cent of Vidarbha's total working force. In case of tribal population, this percentage is 82.7 per cent. Agricultural labourers to total workers among the tribals make a larger share (47 per cent) than among total population (40 per cent). Hence literacy is not a strict occupational necessity for an overwhelming majority of the tribal population.

Areas of high tribal literacy

The region composed of areas around Nagpur in the east and around Akola and Amravati in the west are noted for the highest tribal and total literacy rates (Table 2).


VIDARBHA : TRIBAL POPULATION, 1981
1
AMRAVATI
NAGPUR
BHANDARA
WARDHA
BULDANA
AKOLA
YAVATMAL
CHANDRAPUR
Administrative Divisions
State
District
Tahsil
2
Scheduled Tribe Population
Percentage in total population
60 30 15 10 5
3
Scheduled Tribe Population in Urban Places
Percentage in urban population
40 30 20 10 0 Rural
4
General Literacy
Literates in total population
51 45 39
uq m lq
5
Tribal Literacy
Percentage of tribal Literates to tribal population
36 32 24
uq m lq
uq - upper quartite value
m - median value
lq - lower quartite value
6
Literacy Gap between Scheduled Castes and Scheduled Tribes
Tribal literacy exceeding Scheduled caste literacy by
0 to 10 per cent points
Scheduled caste literacy exceeding tribal literacy by
0 to 10 per cent points
10 to 20 per cent points

Figs. 1 to 6

Table 2

Vidarbha : Tahsils with the Highest Overall and Tribal Literacy Rates, 1981

(Percentnges)

Tahsil	Total literacy	Tribal literacy	Tribal population	Urban population	Workers in agriculture
Nagpur	62.17	51.37	11.40	84.00	25.23
Amravati	57.76	44.84	5.32	48.75	73.48
Akola	54.36	45.44	4.86	43.94	82.48
Wardha	54.20	36.02	13.70	33.27	82.43

Nagpur tahsil is characterised by the highest literacy rate in Vidarbha due to the presence of Nagpur city in it. It has the capital of the former Central Provinces and Berar. Amravati has also retained the leading position in education among the four western districts of Vidarbha-formerly known as Berar under the Nizam's domination. Akola has been a big city with industrial, commercial and number of educational institutions. All this had a positive influence on the literacy rates of both total and tribal populations.

Areas of moderate tribal literacy

Included here are two distinct non-contiguous zones surrounding the zones of high literacy. The range of tribal literacy rates (32 to 35 per cent) is smaller than that of total literacy rates (45 to 50 per cent). The moderate tribal literacy in the western segment is associated with moderate level of urbanization (21 to 23 per cent). In the eastern segment level of urbanization is still lower (10 to 17 per cent) but the presence of the district headquarters of Bhandara and Yavatmal, and other six large towns of 50,000 to 100,000 population, moderates the situation

Areas of low tribal literacy

The five tribal tahsils Rameek, Sakoli, Brahmapuri, Chandrapur, Wani in the east-form a contiguous belt of low tribal literacy (24 to 29 per cent), as well as low total literacy (39 to 45 per cent). Barring Chandrapur tahsil all others have low level of urbanization (9 to 12 per cent). Sakoli is entirely rural. In the west, tahsils of low tribal literacy include Mangrulpir and Morshi. These are also less urbanised (8.6 and 21 per cent respectively). In all the tahsils falling in this group, tribal population is predominantly dependent on agriculture.

Areas of very low tribal literacy

It is remarkable that all the tahsils of very low literacy have peripheral locations spread over eastern, southern and western Vidarbha. These are locationally peripheral to the centres of development. The extremely low rates both of tribal (7 to 24 per cent) and overall literacy (16 to 39 per cent) suggest that not only tribal population but the entire population is not well served by the basic facilities of education.

Table 3

Vidarbha : Tahsils with the Lowest Overall and Tribal Literacy Rates, 1981

(Percentages)

Tahsil	Tribal population	Tribal literacy	Urban population	Tribal workers dependents on agri-culture	Area under forest
Melghat	74.42	12.67	1.83	94.39	75.12
Sironcha	53.74	7.99	Nil	89.86	84.27
Gadchiroli	34.06	19.44	3.38	93.59	62.21
Kelapur	33.30	20.92	9.99	94.79	20.94

It is notable that three tahsils namely Jalgaon, Washim and Mehkar, in western Vidarbha, having low proportion of tribal population (3 to 10 per cent) are also included in this region. Here low literacy is associated with low level of urbanization (6 to 10 per cent) and higher proportion of workers depending on agriculture. The extensive forest cover here has hampered the development of infrastructure, including roads and educational institutions.

Urban-Rural Differential in Tribal Literacy

A wide disparity exists in the urban and rural literacy rates of tribal population in Vidarbha. This is attributed to four main factors : (i) need to get educated is greater in urban places than the agricultural countryside, (ii) urban places are far better equipped with educational facilities, (iii) urban population is socially more aware and economically more capable of imparting education to their children; and (iv) many ruralites migrate to urban places in search of employment (Krishan and Shyam, 1977). The rural areas generally have many more socio-economic problems, burden of dependency and less facilities of education as compared to urban areas.

The urban-rural differential in literacy is wider for tribal (29.22 per cent) than for total population (22.10 per cent). This differential has spatial variation as well. Values of tribal rural literacy range from 41.91 per cent in Akola to 7.99 per cent in Sironcha. Tribal urban literacy varies from 68.57 per cent in Mangrulpir to 31.14% in Rajura. High urban tribal literacy rates indicate the extent to which the level of literacy can rise among the tribal population if the opportunities of education are adequately provided.

Male-Female Differential in Tribal Literacy

Tribal male literacy rate (42.26 per cent) is more than double of the female literacy rate (17.65 per cent). The inequality in literacy by sex is the outcome of traditional prejudices against female education. In the traditional Indian society there are many obstacles in the progress of female literacy in particular. The early age of marriage of girls is one such handicap. For most of the parents female education has a little economic value since there are prejudices against their employment. Female children suffer a relative neglect and the same is the case with their education. These conditions, are, of course, changing, but changing at a much slower pace for the tribal compared to total population. Hence tribal female literacy remains low.

It is remarkable that the male-female differential in literacy for tribal population (24.61 per cent) and total population (24.16 per cent) in Vidarbha is practically the same. Like the rural-urban differential, the male-female differentials in tribal literacy rates are recorded in Nagpur (62.21) per cent males, 39.76 per cent females) and Sironcha (12.89 per cent males and 2.90 per cent females). The relative difference is more in areas with low rates of tribal literacy.

Scheduled Caste-Tribal Gap in Literacy

The scheduled caste population constitutes 6.4 per cent of Vidarbha's total population (Fig. 6). The average literacy rate among the scheduled caste population (40.15 per cent) is higher than among the tribal population rate (29.49 per cent), but lower than among the total population (46.01 per cent).

Areas of high overall, tribal and total literacy rates correspond with each other. Generally scheduled tribe literacy rate is lower than the scheduled caste literacy rate. The higher level of scheduled caste literacy in Vidarbha might have resulted from their higher degree of social and political awakening among the scheduled caste population generated by the efforts of leaders like B.R. Ambedkar and Mahatma Phuley. It is observed that scheduled caste population in the region has come forward and availed the concession offered to them by the Constitution. The scheduled tribe population is still lagging behind in literacy and hence special efforts are needed for improving tribal literacy.

However in five tahsils around Akola and Amravati, tribal literacy (45 per cent) slightly exceeds scheduled caste literacy rate (40 to 43 per cent). The differences are not of much consequence because both schedule caste, and scheduled tribes together constitute less than 10 per cent of total population.

Scheduled caste literacy has edge over tribal literacy (5 to 10 per cent) in 20 tahsils Fig. 6. A larger difference of 10 to 18 per cent exists in 9 tahsils of Bhandara and Chandrapur districts. This wide difference indicates that tribal literacy is significantly lower than scheduled caste literacy in these tahsils.

Correlates of Tribal Literacy

The analysis of literacy patterns of the tribal population has revealed the role of some socio-economic variables in this respect. Table 4 gives the values of r for selected variables and their level of significance. These correlations were calculated on the basis of data for 21 tahsils as explained in the introduction of this paper.

Table 4

Vidarbha : Correlates of Tribal Literacy, 1981

Variable	Coefficient of correlation
Positive relationship	
Percentage of urban population to total population	.702*
Percentage of tribal population enumerated as urban	.728*
Negative relationship	
Percentage of scheduled tribal population	— .753*
Tribal workers dependent on agriculture	— .498+

(* Significant at 99 per cent level)

(+ Significant at 95 Per cent level)

Conclusion

The study reveals that tribal literacy rate decreases with an increase in the share of tribal population in a unit, and is closely associated with the level of urbanization, dependence of tribal population on agriculture, and development of infrastructure, especially roads. Widespread illiteracy prevails among this 'weaker' section of society. This is attributed to among other factors, to their isolation from the mainstream of national life.

In tribal areas, the problem of development is more social than that of resource endowment. Hence special kinds of efforts are required to promote their development. Herein education has to play a major role. And it has to be relevant to the economic background and cultural ethos of these people. The educational system as obtaining in non-tribal context may not be suitable to them.

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THE DEVELOPMENT PROCESS AND URBANISATION IN A NEWLY ORGANISED STATE : A CASE STUDY OF HARYANA

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This paper examines the impact of emergence of Haryana as a new state in 1966 on its development and concomitant urbanisation process. The analysis is based on data for individual towns for all the post-Independence censuses of 1951 to 1981. It was found that urban growth in the state was far more rapid during the post-1966 period than that during the pre-1966 phase. The spatial picture of urban growth also changed somewhat. During the pre-1966 period, the areas of new agricultural development in the northwest and the zone peripheral to Delhi were marked for a rapid pace of urbanisation. After the formation of Haryana in 1966, urbanisation process got intensified not only in these areas but also diffused to others. Delhi, the national capital, was now having an increased influence on growth of Haryana towns, particularly of those located on main road and rail routes converging on it.

Development is a multifacet process reflected in diverse dimensions of a region's personality. One such distinctive dimension is urbanisation Urban places are the most concrete, obvious and geographical expression of the economic progress, social organisation and technological level attained by an area. Matras (1964) rightly argues that in so far as urbanisation itself takes place as a result of social, political, economic and technological processes, the extent of urbanisation may be viewed as a major index of changes and development occurring in the country or the area in question.

Such ideas provided the necessary stimulus for the present paper. It intends to examine the process of urbanisation in Haryana in the context of its development process since Independence in 1947. A special point of inquiry was to investigate the impact of Haryana's formation as a separate state in 1966 on its urbanisation process. The study is based primarily on the townwise data pertaining to the census years of 1951, 1961, 1971 and 1981.

On the Eve of Independence

The region, which was constituted into a separate state of Haryana in 1966, was an overwhelmingly rural part of India at the time of Independence in 1947. The 1941 census had revealed that only 13.39 per cent of its population was urban.

Indeed, at that time there was little incentive for the existing towns to expand or for the new ones to emerge. Natural growth was practically the only determinant of urban growth. A stagnant urbanisation was associated with the predominantly subsistence nature of agricultural economy. Industry, commerce, and general services, which provide the major stimuli for urban change, had not made a breakthrough. Modern transport was yet in the initial stages of development. The main justification for the existence of the towns was their administrative functions, local sociological factors, and historical reasons. District headquarters held some significance as towns. The capital towns of the former princely states of Pataudi, Mahendragarh, Loharu and Jind also mattered somewhat. Places like Kurukshetra owed their importance to religion. Ambala was an administrative centre which experienced some growth consequent upon building of its cantonment, civil lines and railway colony. Barring the some above mentioned cases, towns hardly displayed any active life.

1947—1966 Phase

The partition of the country made a distinct impact on the urbanisation process of Haryana region. The vast multitude of refugees from Pakistan had to be settled in the region as well (Krishan and Chandna, 1973). They were rehabilitated in large numbers in towns like Panipat, Sonipat, Gurgaon, Rohtak, Palwal, Rewari, Ambala, Hissar, Bhiwani, Hansi and Shahbad, all of which saw a sudden expansion in their physical as well as population size (Government of Punjab, Report). Some new industrial towns, such as Faridabad, Yamunanagar and Nilokheri were also raised in addition to establishment of industrial areas in towns like Panipat and Sonipat. The intention was to generate additional employment, particularly for the people uprooted from Pakistan. Above all, the refugee population with an urban background gave an incentive to trade in big as well as small towns. Consequently two kinds of change could be perceived on space. First, the towns, which experienced refugee settlement grew rapidly. Second, they experienced a phenomenal change in their population composition. A large section of refugees was allotted the houses which were vacated by the Muslims on their exodus to Pakistan.

The influx of the urban refugee population was a strong exogenous factor to transform the character of Haryana's urbanisation. Towns at a regional scale, however could not continue growing through such accidental impulses. They had to derive energy for their growth from their surrounding countryside. The matters of rural change and advancements in regional economy cannot be ignored in any analysis of urbanisation.

As a sub-system appended to a bigger system of the former Punjab, the Haryana region could not pick up appreciably in its urbanisation performance. Its urban population made only 17.2 per cent of the total in 1961 as compared to 17.0 per cent in 1951 (Table 1). Part of the reason for this meagre increase in the percentage of Haryana's urban population was rapid growth of its rural population also. Otherwise, the region had started feeling the impulses of development. Three things happened in particular. First, the area along the Grand Trunk road recorded

considerable economic, especially industrial development. Second, the area around Delhi experienced industrial expansion. Third, parts of northwest Haryana, along with Karnal district and its adjoining areas in Ambala district, made advancements in irrigation based agriculture. A base for a faster pace of urbanisation had been laid.

Table 1

India, Punjab and Haryana : Percentage of Urban Population to Total Population 1951-81

Area	1951	1961	1971	1981
India	17.30	18.00	19 91	23.31
Punjab	21.70	23.10	23.80	27.68
Haryana	17.00	17.20	17.78	21.88

Source : Data for this table as well as for all other tables included in this paper were obtained from Census of India, 1981, Series 1, Part II B(i) *Primary Census Abstract, General Population*, Registrar General and Census Commissioner, India, and from Census of India, 1981, Series-6, *Haryana General Population Tables* and *Primary Census Abstract*

1966—1981 Phase

After its formation as a separate state in 1966 and particularly during the 1971-81 decade, Haryana experienced a marked acceleration in its urbanisation process. This urban growth took place in response to the increasing and diversifying functions of urban places. Basic to this development were the changes in the regional economy in respect of agriculture, industry and transport. The consolidation of land-holdings and the reclamation of cultivable wasteland through irrigation did increase the agricultural productivity before 1966. But the real spurt awaited the onset of 'green revolution' consequent upon the evolution of high yielding variety seeds of wheat. The increased agricultural production, progress of dairying, and expansion of agro-based and agro-oriented industries gave an impetus to the growth of towns. This was particularly true of the market towns and centres of agro-processing industries. Besides, a number of manufacturing industries had sprung up in the crescent around Delhi and along the Grand Truck Road. As a consequence, Sonipat, Bahadurgarh, Gurgaon, Faridabad, and Palwal experienced an unprecedented increase in their population during the decade. The state government encouraged establishment of industries in towns located in the proximity of Delhi. The over-spilling of industrial activity from Delhi, where the prices of land were exhorbitantly high and where the planning agencies had imposed restrictions on the use of land for various purposes, were additional factors responsible for this urban development.

Ever since Independence, the continuing expansion of the decentralisation of administrative machinery has also been instrumental in the growth of district and tahsil headquarters. Another factor having a bearing on the urbanisation process was the establishment of urban residential, industrial and commercial estates by the urban development authorities. In many cases, the territorial jurisdiction of the towns had to be changed. In the process,

some villages were included within the town boundary. All this made additions to urban area and population. In brief, the process of urbanisation in the state accelerated since its formation in 1966.

The validity of the above made observations can be tested only through a systematic analysis of data relating to urban centres for the period 1951-81. The discussion in the remaining part of this paper is concerned with a decadewise study of the spatial patterns of urbanisation in Haryana. Some hypotheses relating to urban growth have also been statistically tested.

Urban Growth : 1951-61.

The urban population of Haryana stood at 0.9 million in 1951 distributed among 56 towns. Three towns out of every four were small in size with a population of less than 20,000 each. These accommodated one-third of the total urban population (Table 2). The remaining one-fourth of the towns shared two-thirds of the urban population. None of the towns in 1951 was a city which required a minimum population of 100,000 to gain this status.

During 1951-61 the number of urban dwellers rose from 0.9 million to 1.3 million representing a growth rate of 35.02 per cent. Nearly 75 per cent of this increase was attributed to natural growth which was estimated around 28 per cent (Gosal, 1966).

TABLE 2

Haryana : Urban Population by Size Class of Towns, 1951-81.

All classes	Number of towns			
	1951	1961	1971	1981
Class I	—	1	4	11
Class II	6	8	7	5
Class III	8	9	13	13
Classes IV, V & VI	42	40	37	48

All classes	Population size			
	1951	1961	1971	1981
Class I	—	105,543	465,085	160,2749
Class II	390,878	565,324	546,465	306,128
Class III	255,827	298,747	426,980	417,575
Classes IV, V & VI	321,789	308,066	334,429	500,935

All classes	Percentage of population in each size class of towns to total urban population			
	1951	1961	1971	1981
Class I	—	8.07	26.23	58.68
Class II	40.36	43.23	30.82	10.82
Class III	26.41	22.84	24.08	14.76
Classes IV, V & VI	33.23	23.56	18.86	17.71

The large and medium sized towns grew faster than the smaller ones. The number of urban concentrations with 20,000+ population each increased from 14 in 1951 to 18 in 1961. The share of small towns in urban population decreased from 33.23 in 1951 to 23.56 in 1961 But not all small towns were stagnating : 18 of them had a growth rate of over 30 per cent (Table 3). Two new towns Pehowa and Uklana mandi also emerged in 1961 (Table 3).

Table 3

Haryana : Classification of Towns by Size Category in 1961 and Growth Rate during 1951-61

Size category	Number (and percentage) of towns with a growth rate of			
	30+ %	20—30%	20%	Total
100,000	—	—	1	1
50,000-99,999	4(50)	3(37.5)	1(12.5)	8
20,000-49,999	6(66.67)	2(22.22)	1(11.1)	9
Below 20,000	18(47.37)	8(21.05)	12(31.58)	38
New towns		—	—	2

Spatially the largest number of towns recording a fast growth rate were located in northwestern Haryana, where agriculture made remarkable progress during 1951-61. Most of these towns were agricultural markets and their growth was associated with growing commercialisation of agriculture in their surrounding areas. Fatehabad, Kalanwali, Dabwali, Tohana, Jakhalmandi, Uchana and Sirsa were noted for an exceptionally rapid growth rate.

A fast urban growth was noted also in the peripheral zone of Delhi. Sonipat 51.98%), Gurgaon (103.45%), Faridabad (57.89%) and Palwal (100.24%) recorded large increases in their populations. This development was attributed to the establishment of urban industrial estates in many of these towns, primarily with an objective of rehabilitating the displaced refugee population from Pakistan. In addition, nearness to Delhi and good transportational facilities led to a phenomenal industrial expansion stimulating large scale in-migration. A variety of industries such as engineering goods, electrical and transport came. All this occurred also because of the policy of the then state government to stimulate industrial development in this zone.

Some small towns, such as Thanesar, Ladwa, Radaur and Yamunanagar, also experienced high urban growth rate due to the expansion of their industrial and commercial activities. Charkhi Dadri, Kanina, Narnaul and Ateli were the towns in southwestern Haryana which experienced high growth rates.

On the contrary, towns like Sadhaura, Ambala Cantt. Shahbad, Buria and Chhachhrauli, all of which were situated in the backward hillfoot zone, recorded a growth rate of less than 20 per cent. Farrukhanagar, Pataudi, Rewari, and Bawal also depicted slow growth rate. These towns suffered from the urban shadow effect of their neighbouring, fast growing towns.

A growth rate varying between 20-30 per cent was found in several towns scattered over different parts of the state. Such towns grew mainly through their natural increase.

Urban Growth : 1961-71

The tempo of urban growth in Haryana was maintained during 1961-71 when it recorded increase of 35.6 per cent in its urban population (Table 4). The number of towns increased from 58 to 61, and urban population from 1.31 million to 1.77 million. Three new towns Ganaur, Naraingarh and Tosham appeared during this decade. In 1971, over four-fifths of the population was confined to large and medium size towns (Table 4).

Table 4

Haryana : Decadewise Rate of Growth of Towns According to Size Class

Size class	Percent growth rate during		
	1951-61	1961-71	1971-81
100,000+	12.23	37.96	58.44
50,000-99,999	38.17	30.89	40.96
20,000-49,999	39.82	38.76	39.42
Below 20,000	34.35	36.30	108.97
Total	35.02	35.58	59.47

The spatial pattern of Urban growth during 1961-71 was practically the same as that during the preceding decade. The only exception was the Jind-Gohana-Rohtak-Bhiwani tract where towns grew rapidly due to expansion of their administrative and industrial functions.

Urban Growth : 1971-81

The last decade of 1971-81 witnessed a spectacular growth rate of 59.47 per cent in urban population of the state. Urban population grew from 1.77 million in 1971 to 2.82 million in 1981.

The urban population was distributed among 77 towns of varying size. The number of class I cities had increased from 4 (Rohtak, Faridabad, Yamunanagar and Ambala Cantt) to 11 (Faridabad Complex, Rohtak, Yamunanagar Urban Agglomeration, Panipat, Hissar Urban Agglomeration, Karnal, Ambala Urban Agglomeration, Sonipat, Ambala, Bhiwani and Gurgaon Urban Agglomeration) in 1981. The proportion of urban population living in class I towns increased from 26.23 per cent in 1971 to 56.68 per cent in 1681. Faridabad Complex, with a population of 330, 864 was about twice as big as the second town of Rohtak.

The morphology of Haryana urbanisation, in terms of distribution of urban population among towns belonging to different size categories, became fairly similar to that of India in 1981. About two-thirds of the total urban population was concentrated in the sixteen towns each with a population of at least 50,000 small towns, with a population of 20,000 each, shared only one-sixth of the urban population.

The process of rapid urbanisation observed during 1971-81 cannot be properly understood without some qualifications. The seventeen new towns, which had emerged at the 1981 census, accounted for as much as one-sixth of the increase in the urban population. Faridabad Complex alone contributed about one-fifth of the total urban growth during this period. This apart, a number of towns had experienced an enlargement of their territorial jurisdiction enclosing not only the urban outgrowth and newly developed urban estates but also a number of villages.

TABLE 5

Haryana : Growth Rate of Towns by Cumulative Population Size Groups, 1951-81

Size groups (towns with a population of)	Percentage growth rate during		
	1951-61	1961-71	1971-81
0 — 5,000	28.36	23.58	29.82
0 — 10,000	20.64	26.49	27.39
0 — 15,000	30.41	27.70	29.00
0 — 20,000	30.48	28.02	33.27
0 — 25,000	30.16	30.77	32.10
0 — 30,000	33.37	34.84	34.48
0 — 35,000	32.40	34.72	35.11
0 — 40,000	33.57	35.74	35.70
0 — 45,000	33.57	33.47	35.31
0 — 50,000	34.77	33.99	36.69
0 — 55,000	34.77	33.99	34.40
0 — 60,000	34.14	35.08	34.84
0 — 65,000	36.32	35.15	34.84
0 — 70,000	35.09	35.15	34.84
0 — 75,000	33.86	34.35	34.84
0 — 80,000	33.68	34.35	34.84
0 — 85,000	37.59	31.92	34.84
0 — 90,000	36.36	32.98	37.91
0 —100,000	36.36	32.66	39.23
0 —100,000+	34.02	34.03	41.45
All towns	35.02	35.58	59.47

Evidently, urban growth during 1971-81 demands a more cautious interpretation.

In spatial terms, the tract along the Grand Trunk road was the most noticeable for the rapid urban growth. Towns like Panipat, Gharaunda and Karnal recorded more than 30 per cent growth in association with an expansion of their industrial, commercial, transportational and service functions.

In the zone peripheral to Delhi, towns like Faridabad, Gurgaon, Bahadurgarh, Gohana and Ganaur grew industrially and recorded impressive growth rates of more than 40 per cent each. Towns like Faridabad and Gurgaon, besides having a significant concentration of industries, grew as administrative centres etc.

Northwestern Haryana was also noted for a rapid growth of its towns. Most of the urban centres here recorded over 40 per cent growth, the highest being 82.49 per cent for Sirsa. The increasing commercialisation of agriculture of this tract associated with the increased availability of water for irrigation was responsible for a spurt in its agrobased commerce and industry.

Input of additional functions explained the fast growth of some towns located in different parts of the state. Thanesar, Sirsa, Bhiwani, Sonipat, Faridabad emerged as district headquarters and Maham, Tohana, Bahadurgarh, Bawal and Pehowa as tahsil headquarters. Bhiwani became the headquarters of the State Education Board. Rohtak became the seat of a new university. A mini secretariate was constructed at Hissar. Milk processing plants in public sector were located at Ambala, Pehowa, Jind, Rohtak, Bhiwaini and Faridabad. The functional growth of all these towns helped their demographic growth.

The preceding discussion establishes that pace of urbanisation was fast in those parts of Haryana where (i) industrialisation had been fast; (ii) agriculture attained a high degree of commercialisation; and (iii) administrative, educational and transportational functions of towns multiplied.

A moderate to slow growth was experienced by towns in south and southwestern Haryana which was marked by a backward regional economy. Maham and Beri near Rohtak and Farrukhnagar near Gurgaon suffered due to their close proximity to these large size towns which snatched many of their functions. Several towns in Kaithal-Ambala-Kalka tract also recorded moderate to slow growth rate. Ambala urban agglomeration recorded a slow growth with the shifting of one of the Command's office to Bathinda. The slow growth of Nilokheri was explained by the shift of Home Guard's Training Centre from Nilokheri to Madhuban (Chandna, 1982).

It was notable that the pre-organisation census decade of 1951—61, and post-organisation decade of 1971—81 differed in terms of urbanisation process. Urban population grew by 35.02 per cent during 1951—61 and 59.47 per cent during 1971—81.

It showed that the emergence of Haryana in 1966 was favourable to its urbanisation process. An all round development of the state in agriculture, industry and services greatly stimulated the functional growth of many a town. Their demographic growth naturally followed.

A statistical analysis of data shows that regional disparities in concentration

of urban population decreased over 1951 - 61 but got accentuated during the later two decades of 1961—81. At the same time it was also that distribution of 20,000+ towns had become more uniform over the period. It shows that while the existing medium and large towns continued growing fast in relatively more urbanised areas there was simultaneous influence of new towns in other parts of the state.

Testing of Hypotheses

The study also set forth before itself the task of testing some hypotheses on Haryana's urbanisation. The first related to a positive relationship between the size and growth rate of towns. It was postulated that the proliferating functions of towns led to an increase in their population size, a process which is self propelling (Bala, 1980). This observation was tested by taking into account all those towns which existed at all the censuses from 1951 to 1981. These were grouped into different population size categories (population as at the last year of the reference decade) of : (i) towns with a population of 5,000 and less; (ii) towns with a population of 10,000 and less; (iii) towns with a population of less than 15,000 and so on. Further, population of towns in each group was summed up separately for the two concerned census years and growth rate calculated. In this manner, growth rates were calculated for all the three decades (Table 5).

The hypothesis was validated for all the decades. The growth rate rose with an increase in the size of towns. But no sharp break could be discerned after which the growth rate got a spurt. Also the growth rate of towns smaller than 20,000 in size varied over the decades, more than that of other categories of towns.

The second hypothesis related to a positive relationship between the administrative status and growth rate of towns. The basic premise was that with rising administrative status, towns accumulated more of functions leading to their faster growth rate (Bala, 1980).

All the towns were classified into the three categories of : (i) district headquarters ; (ii) tahsil headquarters; and (iii) others. A town was designated by its highest administrative status only, and its administrative status at the closing year of a census decade was taken into account. The results obtained from computation of the relevant data are presented in Table 6.

Table

Haryana : Growth Rate of Towns by Administrative Status, 1951—81

Administrative status	Percent growth rate during		
	1951—61	1961—71	1971—81
District headquarters	36.98	35.28	66.81
Tashil headquarters	41.38	40.67	36.84
Others	19 85	18.25	28.61

The hypothesis was validated, particularly for the decade 1971—81 when the district headquarters recorded a growth rate of 66 81 per cent, tahsil headquarters of 36.84 per cent and others of 28.61 per cent.

The difference between the growth rates of district headquarters and tahsil headquarters was larger than the difference

between growth rates of Tahsil headquarters and others. Also in all the three census decades, towns without any administrative status recorded the lowest growth rate. However, tahsil headquarters recorded faster growth rate than district headquarters during 1951—61 and 1961—71. It was so because some of the fast growing industrial towns, such as Faridabad and Yamunanagar, were tahsil headquarters.

Finally, it was postulated that Delhi, the national capital had a strong bearing on the growth behaviour of towns in its proximity In order to discern its influence annules were drawn at an interval of 25 kms with Delhi as the centre. The cumulative growth rate of towns falling in different annules was calculated for the three decades spanning 1951—81 (Table 7). It was found that (i) growth rate of Haryana towns located within a radius of 100 kms from Delhi was considerably higher than the state average; (ii) the growth rate decreased with increasing distance from Delhi ; and (iii) the impact of Delhi on growth of towns in its proximity has intensified.

Table 7

Haryana : Growth Rate of Towns Classified by Distance from Delhi, 1951-81

Distance from Delhi (in kms)	Percentage growth rate during		
	1951—61	1961—71	1971—81
0—25	—	—	—
0—50	59.04	68.18	113.75
0—75	44.77	52.50	79.72
0—100	35.86	44.74	68.35
0—125	30.27	40.23	60.98

Conclusions

Since independence and more so since its formation in 1966 Haryana has experienced rapid urbanisation which was related to a sequence of favourable developments. The large scale influx of refugees immediately after partition in 1947; agricultural development consequent upon the consolidation of landholdings, extension of irrigation and expansion agricultural land and gradual industrialisation during 1951—66; and the onset of 'green revolution' dispersal of industries; expansion of administrative, educational and health facilities in towns; and establishment of many new urban estates during 1966-81 gave a spurt to this process. The urban growth rate of 59.47 per cent during 1971-81, that is the census decade following the formation of Haryana in 1966, was significantly higher than that of 35.02 per cent during the preceding census decade of 1951-61. The positive impact of Haryana's emergence as a separate state on its urbanisation process was very much evident.

Despite a rapid urban growth rate, there was only a small increase in percentage of urban population from 17.0 in 1951 to 21.9 in 1981. This was explained by a simultaneous rapid growth rate of rural population, largely as a result of a high rate of natural increase and partly as a product of net in migration.

There were distinct regional variations in the urban growth rate. In the pre-organisation period, the areas of new agricultural development in the northwest and the zone peripheral to Delhi recorded rapid urbanisation. After the formation of

Haryana, the urbanisation process got intensified not only in these areas but also diffused to some other areas. The tract along the Grand Trunk road was one such area where towns grew in their industrial and commercial functions. The prominent administrative centres, such as district headquarters located any where in the state, generally recorded fast growth rate. In contrast, a slow growth was typical of those towns which were located in backward areas or which came under the urban shadow effect of bigger towns or which lost a part of their service zones to Punjab after the emergence of the Haryana-Punjab boundary. It was also observed that spatial disparities in urbanisation increased over time.

Among the various factors influencing the urbanisation process, the impact of Delhi was found to be the most critical. This impact was strong on the towns located within a periphery of 100 kms from this national capital of India and it could be seen strengthening over time. Growth rate of towns was also significantly related to their administrative status and population size. Contrary to the popular belief, most of the small towns were not stagnating.

In fine, the spatial patterns of urbanisation in Haryana were an integral part of its development process which accelerated after the formation of the state in 1966. In addition to the role of this endogeneous factor was salient play of an exogenous factor in the form of positive impulses emanating from Delhi. The national capital of India was noted for its growing influence on the urbanisation contours of Haryana.

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DISABLED POPULATION IN INDIA, 1981 : A SPATIAL VIEW

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For the first time after Independence data on physically disabled population were collected by the Census of India in 1981. Such data enable us to have a spatial view of the disabled population in India. The present paper is devoted to this purpose. It was learnt that India had a disabled population of 1.12 million persons in 1981. Six out of every seven disabled persons were rural by residence. The blind made nearly two-thirds of the total. Crippled were about one-fifth and dumb about one-sixth. Incidence of disability was found as higher in the northern, northeastern and central parts of the country.

While making any study of the distribution of the disabled population in the country, it is essential to ascertain 'who is disabled ?' To this end, the Ministry of Human Resource Development defines the 'disabled' as follows ;

1. The blind : persons suffering from either of the following :
   i) total absence of sight,
   ii) visual acuity not exceeding 6/60 or 20/200 (snellen) in the better eye with correcting lenses,
   iii) limitation on the field of vision substanding an angle of 20 degrees or worse.
2. The deaf : persons in whom the sense of hearing is nonfunctional for ordinary purposes of life. Generally, a loss of hearing at 70 decibles or above at 500, 1000 or 2000 frequencies will make residual hearing non-functional.
3. The orthopaedically handicapped : persons who have a physical defect or deformity which causes an undue interference with the normal functioning of the bones, muscles and joints.

Following the above definitions, the 1981 census collected data on the number of totally blind, totally crippled and totally dumb, regardless of their age, sex or other characteristics. It was undertaken with an intention to make available a frame mainly for sample surveys to be conducted in future.

Spatial Distribution

The disabled persons in India numbered 1, 118, 948 in 1981. They included 478,657 blind (42.78 per cent), 363,600 crippled (32.49 per cent), and 276,691 dumb (24.73 per cent).

Among the disabled persons 969, 401 (86.63 per cent) were in rural areas and only 149,547 (13.37 per cent) in urban

areas. Evidently incidence of disability was higher in rural India which accounted for 76.7 per cent of the total population.

Fig. 1 shows that the totally blind were spread over a vast area, including all the districts of Punjab and Rajasthan, most of the districts of Haryana, Uttar Pradesh, Bihar, Maharastra, Madhya Pradesh, Orissa and Andhra Pradesh, and a fair number of the districts in Karnataka and Tamil Nadu. On the whole, districts claiming for the highest proportion of the blind among the disabled made 63.18 per cent of the total. These covered 71.79 per cent of the area.

Dominance of the crippled was noticed in three zones : (i) western Jammu & Kashmir, union territories of Chandigarh and Delhi, and parts of Haryana; (ii) the central tribal belt extending from Gujarat to the northeastern states and union territories, and (iii) southern Maharastra, central Karnataka, and parts of Kerala, Tamil Nadu and Andhra Pradesh. Districts falling in these zones made 20.40 per cent of the total and covered 16.07 per cent of the area.

Likewise, the dumb were predominant in three zones : (i) parts of the western Himalayas, (ii) almost all the northeastern states/union territories and northeastern Bihar and (iii) western and eastern coastal plains. Altogether, dumb-dominated zones made 16.42 per cent of the total number of districts and covered 12.14 per cent the of area.

Disability Regions

Fig. 1 also presents, in particular, a detailed picture of the regional pattern of each disability category as identified through the clustering of districts of homogeneous type of dominance. The procedure for delineating the disability regions may be explained.

Each disability category was ranked in each areal unit, i.e. district, in accordance with its proportionate share in the total disabled population. Accordingly, each district was assigned a sequence of the blind, the crippled and the dumb. Finally, districts were grouped keeping in view their homogeneity. As such, six types of disability areas were discovered. These were further grouped into three broad categories as shown in Fig. 1

I. Blind-dominated

(i) *Blind-crippled-dumb* : Occupying a major part of the country, this region covers 207 districts (51.49 per cent), covering an area of 1,860,335 km² (57.97 per cent), and a population of 610690 disabled (54.58 per cent). This region includes all the districts of Punjab and Rajasthan and a vast majority of the districts in Haryana, Uttar Pradesh, Bihar, Maharashtra, Madhya Pradesh and Orissa.

(ii) *Blind-dumb-crippled* : This region extends over 47 districts (11.69 per cent), covering an area of 443,414 km² (13.82 per cent), and a population of 114,317 disabled (10.22 per cent). Spatially, it is fragmented into patches. The major ones among these are located in the western Himalayas or form parts of the south Indian states of Karnataka, Andhra Pradesh and Tamil Nadu. A few pockets are also met in Kerala, Lakshadweep, Madhya Pradesh, Bihar, West Bengal and most of the northeastern states/union territories.

II. Crippled-dominated

(iii) *Crippled-blind-dumb* : In frag-

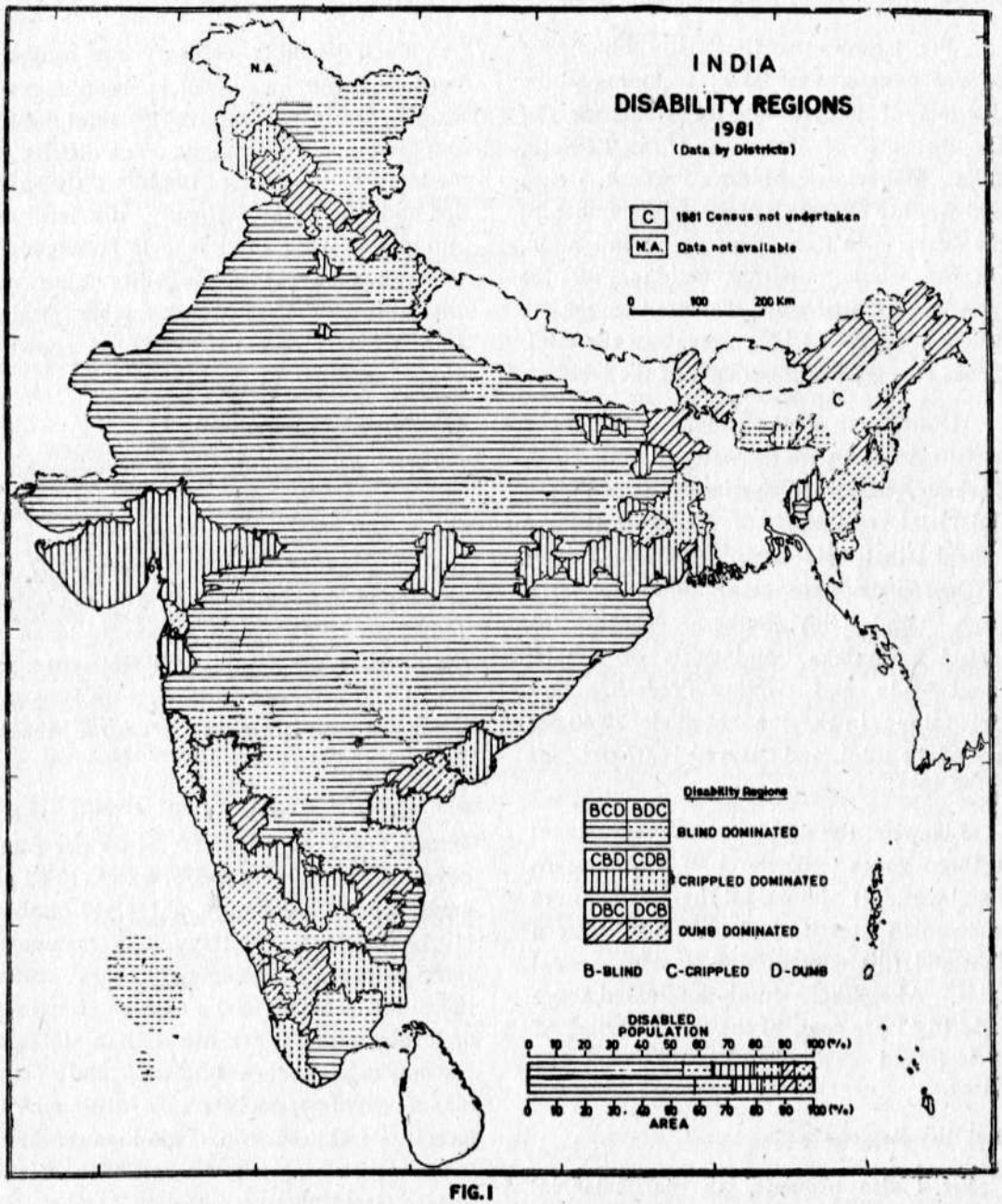
INDIA
DISABILITY REGIONS
1981
(Data by Districts)
C 1981 Census not undertaken
N.A. Data not available
0 100 200 Km
N.A.
C
Disability Regions
BCD BDC
BLIND DOMINATED
CBD CDB
CRIPPLED DOMINATED
DBC DCB
DUMB DOMINATED
B-BLIND C-CRIPPLED D-DUMB
DISABLED POPULATION
0 10 20 30 40 50 60 70 80 90 100 (%)
0 10 20 30 40 50 60 70 80 90 100 (%)
AREA

FIG. I

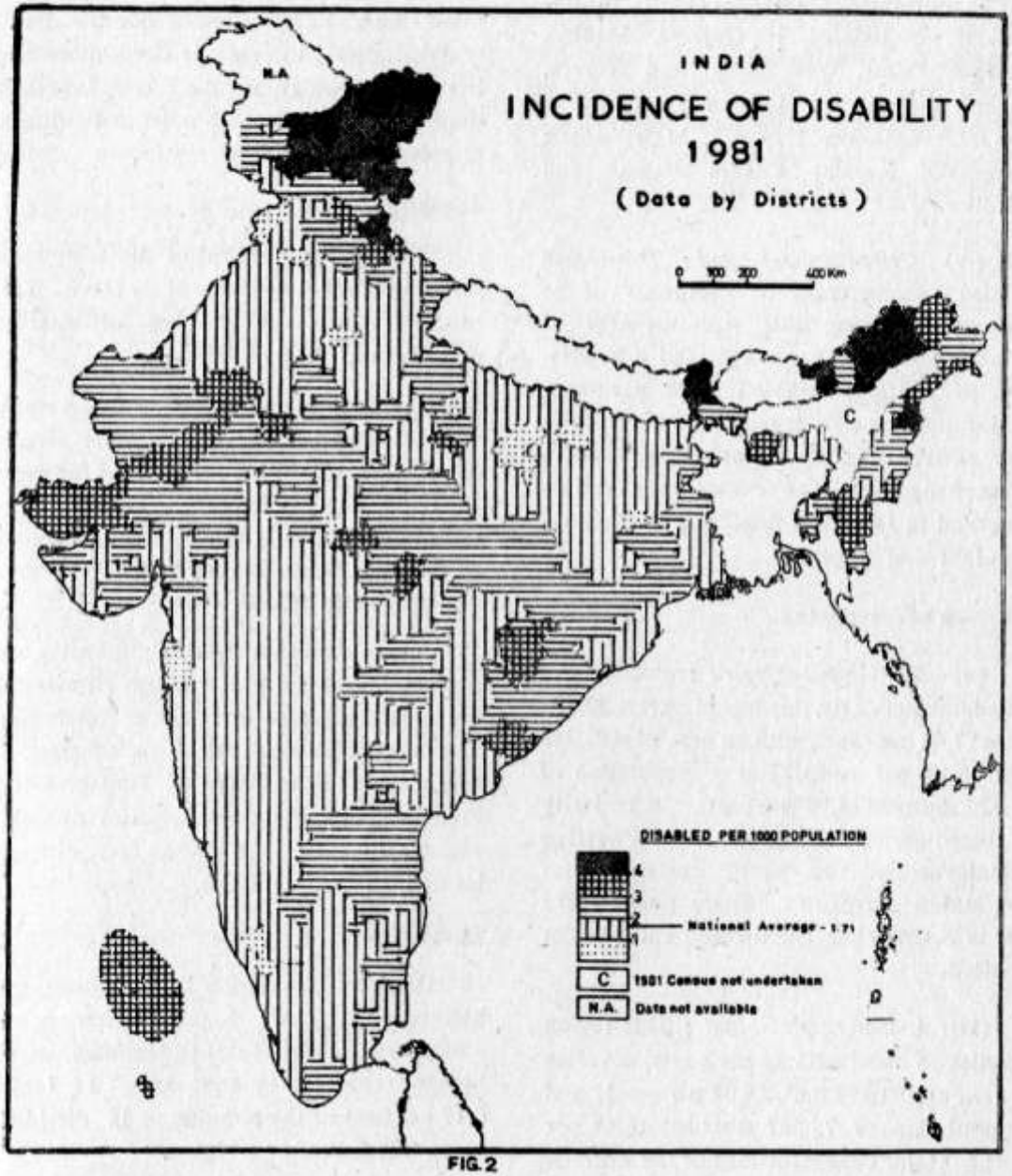
INDIA
INCIDENCE OF DISABILITY
1981
(Data by Districts)
0 100 200 400 Km
N.A
C
DISABLED PER 1000 POPULATION
4
3
2
1
National Average - 1.71
C 1981 Census not undertaken
N.A. Data not available
D

FIG. 2

ments, this region covers 48 districts (11.94 per cent), constituting an area of 335,331 km² (10.45 per cent) and a population of 167,552 disabled (14.97 per cent). Major pockets are located in Gujarat, Madhya Pradesh, Bihar, West Bengal and Tripura. Other pockets are located randomly in Jammu & Kashmir, Haryana, Maharashtra, Karnataka, Kerala, Andhra Pradesh and Nicobar.

(iv) *Crippled-dumb-blind* : This region is also fragmented. It comprises of 34 districts (8.46 per cent) with an area of 180,253 km² (5.62 per cent), and a population of 100,280 disabled (8.96 per cent). Major pockets are located in the western and eastern coastal plains as well as in West Bengal. A few others may also be observed in Jammu & Kashmir, Meghalaya, Manipur and Nagaland.

III. **Dumb-dominated**

(v) *Dumb-blind-crippled* : Scattered in fragmented pockets, this region covers 30 districts (7.46 per cent), with an area of 196,313 km² (6.12 per cent), and a population of 53,522 disabled (4.78 per cent). A majority of these districts are located in the western Himalayas and the north eastern states and union territories. Some pockets are met in Karnataka, Tamil Nadu and Andhra Pradesh.

(vi) *Dumb-crippled-blind* : This region includes 36 districts (8.96 per cent), covering an area of 193,179 km² (6.02 per cent), and a population of 72,587 disabled (6.49 per cent). Major concentrations of the districts in this category are noticeable in the western Himalayas and the northeastern states and union territories. A few pockets are found in the eastern and western coastal plains.

It may be noted that blind-crippled-dumb, blind - dumb - crippled and dumb - blind - crippled disability regions cover more area but less population the crippled-blind-dumb, crippled-dumb-blind and dumb-crippled-blind disability regions.

Disability Ratio

The spatial patterns of disability have been examined in terms of its ratio. This ratio is simply the number of disabled persons per 1000 population.

The disability ratio for India as a whole was calculated as 1.71 In other words, there were 1.71 disabled persons for every 1000 people in the country. The disability ratio ranged from 0.45 in Greater Bombay to 8.78 in South Sikkim. Fig. 2 shows disability ratio by districts.

It is evident that the disability ratio was distinctly high in the western Himalayas, northeastern states and union territories, and the central tribal belt. By contrast, it was notably low in parts of Punjab, Uttar Pradesh, Bihar, in union territories of Delhi and Chandigarh, and in a few districts located on the west coast.

Conclusion

Disabled population is a disadvantaged population. Their higher frequency is undoubtedly detrimental to the efficiency of human resources in any area. In India, 0.17 per cent of the population in disabled, being blind, deaf or crippled.

There are considerable spatial variations in this regard. In terms of the relative dominance, blindness ranks first in 63.18

per cent of the districts and 71.79 per cent of area, followed by crippleness in 20.40 per cent of the districts and 16.07 per cent of area, and dumbness in 16.42 per cent of the districts and 12.14 per cent of area. The disability ratio is higher in the northern, northeastern and central parts of the country.

All these facts provide only a general demographic profile of the disabled population in India and touch only limited dimensions of its spread. It is quite difficult to identify the reasons underlying the regional spread of each disability due to non-availability of related data. However, the above profile is likely to give some clues to the further comprehension and evaluation of the situation for formulating requisite plans, schemes and policies for the welfare of the disabled.

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ANALYSING THE STRUCTURAL CHANGES IN THE INDIAN ECONOMY - CERTAIN AVOIDABLE ANOMALIES IN THE USAGE OF THE POPULATION CENSUS DATA

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The objective of the present paper is to highlight the problems of comparability of the workforce data obtained from the past few population censuses in drawing any meaningful inference. An attempt is also made to assess the magnitude of the discrepancies and examine if the retabulation of the data to take account of these problems would render the general conclusions drawn from the uncorrected data null and void at the national and regional levels.

The analysis of the structural changes in the Indian economy have depended *inter alia* on the workforce data ; one of the important sources for this is the decennial population census. Several scholars working in this area have argued that India, for the first time in the present century, has experienced a major shift away from agriculture, the diversification of the economy being reflected in the shrinking share of agriculture in the total workforce in the 1981 census. It has also been argued that with the ushering in of the modern technology and economic liberalisation since the mid-seventies, the intermediate sector is in the process of gradual liquidation. The fall in the share of household industrial workers in 1981 compared to that in 1961 is quoted as an evidence of this phenomenon. The increasing predominance of the commercial capital vis-a-vis the industrial capital is stated to be reflected in the dramatic rise in the share of workers in trade and commerce. Finally, a decline in the proportion of workers engaged in "other services" is explained in terms of a decline in informal and undefined job opportunities, as a consequence of growth of the formal industrial sector.

Special Tables (Series I, Part II) based on five per cent data tabulation, giving the distribution of workforce in nine industrial categories in 1981, has made it possible to analyse the pattern of intersectoral shifts during the seventies and compare this with that in the preceding decade. The recent debate on the structural changes in the country has depended heavily on the census data on workers for 1981 classified into four categories viz, cultivators, agricultural labourers, household manufacturing and other workers, as published in Paper 3 of 1981. The debate is likely to get rejuvenated with the further disaggregation of

"other workers" into six categories as given in the Special Series (Part II) of the census. It is, however, important to sound a note of caution to the scholars venturing temporal comparison of the census data because of the changes in the definitions of various concepts and also the different classification schemes for the industrial workforce adopted at different points of time. Some of the problems with the census data, due to say changes in the definition of worker etc., are well known although their implications are often not appreciated in the usage of the data. However, there are several other problems, specially those pertaining to the classification scheme, that are not even known except to a select few, mostly in the office of the Registrar General.

The researchers working with this data have been caught unaware by the changes in the scope and coverage of the nine categories in which the workforce data is presented. It is not merely the inexperienced doctoral students who have taken the workforce categories of the 1961, 1971 and 1981 censuses as being "roughly comparable." Most of the senior craftsmen in this profession, planners and policy makers have made similar assumptions and proceeded to make their rigorous empirical analysis and statistical testing of their hypotheses using the uncorrected data[1].

Identification of the Discrepancies

The industrial classification scheme adopted for the tabulation of the establishment and workforce data in the 1971 census[2] and its correspondence with the scheme adopted in the 1961 census are mentioned in a few of the General Economic Tables of the 1971 census. It it unfortunate that along with the workforce data no indication is given regarding these changes—not even in a footnote and consequently many of the un Suspecting users have either missed or ignored these as of marginal significance. The total unconcern of the Census Organisation regarding the inappropriate usage of their data for the past one and half decade strikes as surprising specially since this is primarily due to the inadequate care taken by them in the presentation of their tables[3]. In view of the major changes in the tabulation and presentation of the data, it was necessary to take up a project to make comparable data available at least in the nine industrial categories for different censuses.

A scholar uninitiated to the census classification schemes is often led to believe that the only problem in the usage of the workforce data of 1961,1971 and 1981 censuses with regard to the category III viz. *Mining Quarrying*, *Livestock*, *Forestry* etc. of 1961 which has been divided into two, one for *Mining and Quarrying* and

1. See Ambannavar (1977), Bhalla and Alagh (1979), Mitra and others (1980, 1981), and Brahmananda (1982) just to mention a few of the studies.
2. The data in the nine categories of workers are available for every town and village and all higher level spatial units for 1961 and 1971 censuses. Unfortunately, these would not be published for the 1981 census. The tabulation plan for the 1981 census indicates that the data in the nine categories would be published only upto the district level of disaggregation.
3. It is indeed alarming that the scholars working in the Census Organisation have also made similar errors in their analysis involving temporal comparisons, as may be seen in the list of persons in footnote 1.

the other comprising the rest. The *Introduction* to the Primary Census Abstract, however, mentions another change in a very inconspicuous manner. It is observed that the household activities covering cattle rearing, bee keeping, orchardry, plantations etc., that were parts of the *Household Industry* in 1961, are not included in the *Household Manufacturing Sector.*

This evidently gives the impression that all the other categories of the workforce are comparable over the different censuses which unfortunately is not the case.

In order to understand the discrepancies in the data from different censuses, it is necessary to examine the changes in the coverage of various categories of workers. In classifying the workers and the establishments in the 1961 census, *Indian Standard Industrial Classification* (ISIC), evolved by the Director General of Employment and Training in 1958, was adopted. However, the 1971 economic data was tabulated using the *National Industrial Classification* (NIC) of 1970. The ISIC has 10 divisions, 45 major groups and 343 minor groups. The NIC, on the other hand, has 10 divisions, 66 major groups and 386 minor groups. One can note that with the adoption of the NIC, the categorisation has become simpler, intuitively more appealing and internationally comparable but, all the same, this has created serious problems of comparability with the past data.

It is important to mention that although the names of the categories have remained, by and large, unchanged over time, their coverages vary significantly that have caused confusion. Based on the examination of the details of the major and minor groups included in various workforce categories, Tables 1, 2 and 3 have been prepared that are self explanatory. Table 4 shows the adjustments needed for comparability of the 1961 census data with those from the subsequent censuses. It is clear that only three categories viz., *Non-household Manufacturing, Construction, Transport-Storage and Communication* have not changed in terms of their coverage. For the rest, however, there are some changes and it would be hazardous to make temporal comparisons or draw inferences regarding the trend without ascertaining the magnitudes of the discrepancy.

It may be seen in Table 4 that the minor groups 000, 001, 002, 003, 004 and part of 005 were taken out of the industrial divisions and merged with the agricultural workforce viz. cultivators and agricultural labourers in 1961. To that extent, the workforce in agriculture as per the 1961 census would be an overestimate compared to the corresponding figures from 1971 and 1981 censuses. It is unfortunately not possible to assess the degree of overestimation or make appropriate adjustments to ensure total comparability, since the figures for these minor groups have not been published. However, the descriptions of these minor groups in the ISIC and NIC suggest that these cover roughly similar items of production in different censuses.

It has been mentioned above that the category *Mining, Quarrying, Forestry and Fishing* of 1961 have been segmented into two in the subsequent censuses. A simple addition of the figures in the two corresponding categories in 1971 or 1981, however, would not give figures comparable with the 1961 category. This is firstly because

Table 1 : Comparative Description of the Major Divisions of the Indian Standard Industrial Classification (ISIC), 1958 and the National Industrial Classification (NIC), 1970 as Adopted by the Office of the Registrar General (Census)

NIC Divisions	Description	ISIC Divisions	Retabulation Procedure
0	*Agriculture, Hunting, Forestry and Fishing*	(0 and part of 8)	Division (0) ; add *agricultural service* (not specified in ISIC) from Division (8).
1	*Mining and Quarrying*	(1)	Division (1)
283	*Manufacturing, Processing Servicing and Repairs*	(2&3)	Divisions (2 and 3)
4	*Electricity, Gas and Water*	(Part of 5)	Division (5) ; subtract *garbage and sewerage disposal, operation of drainage system and all other types of work connected with public health and sanitation (511).*
5	*Construction*	(4)	Division (4)
6	*Wholesale, Retail Trade Restaurants and Hotels*	(6 & 8, partly)	Division (6) ; subtract *trade and commerce, Miscelleneous* (69) and add *services rendered by hotels, boarding houses, eating houses, cafes, restaurants and similar other organisations to provide lodging and boarding facilities* (882).
7	*Transport, Storage and Communication*	(7)	Division (7)
8	*Financing, Insurance, Real Estate and Business Services*	(6 & 8, partly)	Major group (69) and *legal services* (840)
9	*Communities, Social and Personal Services*	(5 & 8, partly)	Division 8 ; subtract (840) and (882) add (511)
10	*Activities not adequately defined.*	(9)	Division (9)

Note : The numbers identifying the Divisions, Major Groups and Minor Groups of the ISIC have been put within parenthesis.

Table 2 : Correspondence between the Workforce Categories of the 1961 Census and the ISIC Divisions,

Workforce Categories	Coverage as per ISIC
I. Cultivators II. Agricultural Labourers	These two are distinct categories for the tabulation of the workforce data and are not part of the ISIC except, that these include minor group (000), (001), (002), (003), (004) and a part of (005).
III. Mining, Quarrying, Livestock, Forestry, Fishing, Hunting and Plantations, Orchards and Allied Activities.	Non-household based activities of Division (0) & Division (1) ; subtract (000), (001), (002), (003), (004) and a part of (005).
IV. Household Industry.	Household based activities of the Divisions (0,1,2 and 3) ; subtract (000), (001), (002), (003), (004) and a part of (005).
V. Manufacturing other than Household Industry.	Non-household based activities of the Divisions (2 and 3).
VI. Construction	Division (4)
VII. Trade and Commerce	Division (6).
VIII. Transport, Storage and Communication.	Division (7).
IX. Other Services	Division (5,8 and 9).

Note : The numbers identifying the Divisions, Major groups and Minor Groups of the ISIC have been put within parenthesis.

Table 3 : Correspondence between the Workforce Categories of the 1971 and 1981 Censuses and the NIC Divisions

Workforce Categories	Coverage as per NIC
I. Cultivators II. Agricultural Labourers	These two are distinct categories for the tabulation of the workforce data and are not part of the NIC.
III. Livestock, Forestry, Fishing, Hunting and Plantations, Orchards and Allied Activities.	Division 0
IV. Mining and Quarrying	Division 1
V. Manufacturing, Processing, Servicing and Repairs.	
(a) Household Industry	Household based activities of Divisions 2 & 3.
(b) Non-household industry	Non-household based activities of Divisions 2 & 3.
VI. Construction	Division 5.
VII. Trade and Commerce	Division 6 and 8.
VIII. Transport, Storage and Communication.	Division 7
IX. Other Services.	Division 4,9 and X

Table 4 : **Correspondence between the Workforce Categories of 1961, 1971 and 1981 Censuses**

1971 and 1981 Census Category	1961 Census Category
I. Cultivator II. Agricultural Labourer]	Cultivator (I) and Agricultural Labourer (II) ; subtract (000), (001), (002), (003), (004) and a part of (005),
III. Livestock, Forestry, Fishing, Hunting, Plantation, Orchards and Allied Activities	Division (0); add agricultural services.
V. Mining and Quarrying	Division 1
III & IV Mining, and Quarrying, Livestock, Forestry, Fishing etc	Mining Quarrying, Livestock, Forestry etc. (III) ; add household based activities of division (0) and (1) ; add uncovered segment of (000), (001), (002), (003), (004) and a part of (005) and add agricultural services.
(a) Manufacturing, Processing, Servicing and Repairs - Household industry.	Household Industry (IV) ; subtract Division (0 and 1).
(b) Manufacturing, Processing, Servicing and Repairs - Non-household industry	Manufacturing other than household industry (V).
IV. Construction	Construction (VI).
VI. Trade and Commerce	Trade and Commerce (VII) ; subtract (697) and add (840) and (882).
VII. Transport, Storage and Communication.	Transport, Storage and Communication (VIII).
IX Other services.	Other Services (IX) ; subrtact (840), (882) and agricultural services and add (697).

Note : The ISIC Division/Major Group/Minor Group and the Workforce Category numbers of 1961 have been shown within perenthesis.

sub-groups from 000 to 004 and a part of the minor 005 have been excluded from this category in 1961, as mentioned above. The second and more important reason for the discrepancy is that the category includes only the non-household activities in 1961. To make the figures comparable, one must combine the household based workers engaged in *Mining, Quarrying, Forestry and Fishing* together with the corresponding non-household workers in 1961. Finally, it may be noted that the NIC major division 0 includes division (0) and a segment of division (8) of the ISIC. The *Agricultural Services* that were parts of division (8) (and hence of Other Services) in 1961 have been subsequently added to *Livestock, Forestry etc.* Unfortunately, once again, the data on workers engaged in *Agricultural Services* are not available for the year 1961 and consequently appropriate adjustment in the data on agricultural workers and other services cannot be carried out. The division (1) of ISIC, however, would be comparable to division 1 of NIC and these would give comparable figures for *Mining* and *Quarrying* at different points of time.

The adjustments necessary to obtain comparable estimates of workers in *Household Industries* are now very clear. This category in 1961 comprises the household based activities of four ISIC divisions (0,1,2 and 3). The *Household Manufacturing* Sector in 1971 or 1981, on the other hand, covers only the divisions 2 and 3. Exclusion of the figures for workers in the two non-manufacturing divisions viz. (0 and 1) from that of the *Household Industries* of 1961 would render it comparable with the figures for *Household Manufacturing* from the subsequent censuses.

Trade and Commerce in 1971 and 1981 include services rendered by *hotels, boarding houses, eating houses, cafes, restaurants and similar other organisations to provide lodging and boarding facilities* (minor group (882) of the ISIC) and the *legal services rendered by barrister, advocate, solicitor, mukteer, pleader, mukurie, munshi* etc. (840) and excludes the *distribution of motion pictures* (697). For comparability, therefore, the workers in the minor groups (840) and (882) must be added to the workers in *Trade and Commerce in* 1961 and those in (697) must be subtracted. Exactly, opposite adjustments would have to be done with respect to the workers in *Othe Services* viz. adding the workers in (697) and subtracting those in (840) and (882). Also, the agricultural services ought to be taken out of the Other Services, in 1961. It may thus be seen that the "*Other Services*" in 1971 or 1981 was a much smaller category in terms of its coverage than in 1961 as several of the specialised services were excluded from it (division 8) and added to the sectors which receive the services.

The Changing Scenario of Work Force Structure

It is well known that the concept of worker has undergone changes over time creating serious anomalies, other than those discussed above. These changes would affect not merely the size of the workforce but also its percentage distribution in various categories and its sex composition. Since the problem has been analysed by the scholar elsewhere[4] and also by a number of other

4. See Kundu and Raza (1984)

Table 5 : **Changing Workforce Structure in India - Original and Revised Estimates** 74

	1961 *Original*		1961 *Revised*		1971		1981	
	Total	Urban	Total	Urban	Total	Urban	Total	Urban
Cultivators								
Total	52.34	6.54	52.34	6.54	42.91	5.10	41.53	5.13
Male	50.97	5.55	50.97	5.55	45.73	5.20	43.70	5.19
Ag. Labourers								
Total	17.17	3.53	17.17	3.53	26.88	6.08	24.94	6.05
Male	13.73	2.24	13.73	2.24	21.71	4.72	19.56	4.66
Non household Manufacturing								
Total	4.23	20.96	4.23	20.96	5.94	22.86	7.83	24.68
Male	5.56	22.94	5.56	22.94	6.61	24.02	8.92	26.05
Construction								
Total	1.09	3.65	1.09	3.65	1.29	3.50	1.60	3.98
Male	1.41	3.85	1.41	3.85	1.35	3.57	1.81	4.12
Transport Storage, etc.								
Total	1.60	8.04	1.60	8.04	2.44	9.97	2.73	8.99
Male	2.29	9.26	2.29	9.26	2.85	10.76	3.32	9.88

Mining & Quarrying Livestock, Forestry etc.								
Total	2.77	2.51	3.88	2.89	2.89	2.68	2.81	2.80
Male	3.12	2.47	4.28	2.78	2.90	2.96	2.64	2.85
Household Manufacturing								
Total	6.38	7.90	5.26	7.52	3.52	4.96	3.46	4.94
Male	5.70	5.77	4.54	5.46	3.37	4.38	3.18	4.21
Trade & Commerce								
Total	6.06	16.30	4.55	18.70	5.56	20.05	6.26	19.56
Male	5.29	18.00	5.97	20.71	6.36	21.42	7.33	20.96
Other Services								
Total	10.38	30.60	9.88	28.20	8.74	24.88	8.78	23.86
Male	11.77	29.93	11.09	27.21	9.08	23.34	9.21	22.06
Participation Rate								
Total	42.97	33.47	42.97	33.47	33.09	23.34	33.44	29.17
Male	57.16	52.37	57.16	52.37	5.61	48.32	51.23	28.96

Note : 1) The (original) figures for 1961 and 1971 for Cultivators and Agricultural Labourers have been taken from the 1981 Census.

2) The figures for Cultivators, Agricultural Labourers and Household Manufacturing workers for 1981 are based on total census data. The other figures for this year have been computed using the five percent sample.

3) In the absence of the data on workers in minor division (000), (001), (002), (003), (004) and a part of (005), appropriate adjustments could not be carried out. To that extent the revised figures for Cultivators and Agricultural Labourers would be somewhat higher while those in Livestock, Forestry etc. would be somewhat lower than the desired estimates in 1961. Also, as the number of workers engaged in agricultural services are not published, the revised estimate of Other Services would be marginally higher while that of Livestock, Forestry etc. would be marginally lower than the desired estimates in 1961.

Table 6 : Estimated Number of Workers in Various Census Categories in 1961 Comparable to those in 1971 and 1981 Census (All Areas)

	1	2	3	4	5	6	7	8
	Workers in Household Industry (Original)	Workers in Household Manufacturing Industry (Revised)	Percent Change (2) over (1)	Workers in Mining, Quarrying, Livestock, Fishing Hunting, Forestry, etc. (non-household) (Original)	Workers in Livestock, Forestry, Fishing Hunting, etc. (Revised)	Workers in Mining & Quarrying	Workers in Mining, Quarrying, Livestock, Fishing, Forestry, Hunting etc. (Revised)	Percent Change (7) over (4)
INDIA	12,031,087	9,931,095	—17.45	5,221,398	6,403,136	918,254	7,321,390	40.22
Andhra Pradesh	1,815,154	1,427,660	—21.35	560,958	858,058	90,394	948,452	69.08
Assam	280,353	279,891	— 0.16	518,100	511,709	6,853	518,562	0.09
Bihar	1,057,900	901,473	—14.79	652,183	537,385	271,225	808,610	23.99
Gujarat	555,606	311,380	—43.96	104,850	328,411	20,665	349,076	222.93
Jammu & Kashmir	95,628	61,602	—35.58	25,479	59,231	274	59,505	133.34
Kerala	488,562	482,668	— 1.21	487,359	470,368	22,885	493,253	1.21
Madhya Pradesh	841,395	791,565	— 5.92	492,287	445,726	96,391	542,117	20.12
Madras	1,206,812	1,140,605	— 5.49	435,498	456,913	44,791	501,704	15 20
Maharashtra	832,169	742,934	—10.72	406,391	444,137	54,489	498,626	22.70
Mysore	708,710	528,232	—25.46	336,076	468,172	48,382	516,554	53.70
Orissa	530,809	457,271	—13.85	131,996	178,317	27,217	205,534	55.71
Punjab	540,849	404,996	—25.12	66,150	196,692	5,311	202,003	205.37
Rajasthan	598,182	337,929	—43.51	171,081	400,743	30,591	431,334	152.12
Uttar Pradesh	1,801,746	1,457,912	—19.08	171,851	503,063	12,630	515,693	200.08
West Bengal	487,311	441,578	— 9.38	577,881	463,900	159,714	623,614	7.91

9	10	11	12	13	14
Workers in Trade & Commerce (Original)	Workers in Trade & Commerce. (Revised)	Percent Change (10) over (9)	Workers in Other Services (Original)	Workers in Other Services (Revised)	Percent Change (13) over (12)
7,653,571	8,579,523	12.10	19,572,479	18,646,522	—4.73
798,147	884,712	10.85	1,733,585	1,647,020	—4.99
184,707	196,913	6.61	424,251	412,045	—2.88
522,949	561,894	7.45	1,456,306	1,417,361	—2.54
411,156	461,806	12.32	846,653	796,003	—5.98
33,620	36,864	9.65	141,657	138,413	—2.29
321,933	427,320	32.74	1,423,293	1,317,905	—7.40
403,637	423,771	4.99	1,098,127	1,077,993	—1.83
758,307	907,060	19.62	2,357,573	2,208,814	—6.31
856,050	997,312	16.50	1,617,031	1,475,769	—8.74
391,020	480,457	22.87	1,004,630	915,193	—8.90
147,462	160,875	9.10	1,025,968	1,012,555	—1.31
385,471	413,888	7.37	931,377	902,963	—3.05
288,157	305,867	6.15	678,614	660,904	—2.61
1,062,882	1,129,731	6.28	2,710,081	2,643,232	—2.47
872,204	947,229	8.60	1,549,637	1,474,612	—4.84

NOTE : Revised estimates for 1961 are comparable with the figures in the corresponding categories of the 1971 and 1981 censuses. The estimates in col. 5 & 6 are comparable with the corresponding two categories of 1971 and 1981 while those in col. 7 are comparable with the sum total of (a) Mining, Quarrying and (b) Forestry, Livestock, Fisheries, Animal Husbandry etc. of 1971 or 1981.

Table 7 : Estimated Number of Workers in Various Census Categories in 1961 Comparable to Those of 1971 Census (Urban Areas Only)

	1	2	3	4	5	6	7	8
	Workers in Household Industry (Original)	Workers in Household Manufacturing Industry (Revised)	Percent Change (2) over (1)	Workers in Mining, Quarrying, Live-stock, Fishing, Forestry, Hunting etc. (Original)	Workers in Livestock Quarrying. Forestry etc.	Workers in Mining and Quarrying etc.	Workers in Mining & Quarrying Livestock, Forestry etc. (Revised)	Percent change (4) over
INDIA	2,088,317	1,987,164	— 4.85	664,842	553,633	210,462	764095	14.92
Andhra Pradesh	270,156	259,115	— 4.09	81,344	41,708	30,677	72385	18.00
Assam	18,325	18,276	— 0.27	4,928	4,875	102	4977	0.99
Bihar	100,024	91,289	— 8.73	85,711	28,933	65,513	94446	10.19
Gujarat	102,365	78,971	—22.85	19,297	37,836	4,855	42691	121.23
Jammu & Kashmir	13,785	13,606	— 1.30	2,370	2,520	29	2549	7.55
Kerala	47,559	46,052	— 3.17	43,024	43,668	863	44531	3.50
Madhya Pradesh	164,414	159,054	— 3.26	77,630	49,946	33,044	82990	6.90
Madras	379,568	375,353	— 1.11	127,022	121,341	9,896	131237	3.32
Maharashtra	237 967	231,323	— 2.79	80,691	69,316	18,019	87,335	8.23
Mysore	183,158	172,599	— 5.76	47,446	38 034	19,971	58,005	22.25
Orissa	30,201	28,349	— 6.13	12,286	9,325	4,813	14,138	15.07
Punjab	75,109	67,901	— 9.60	14,144	20,067	985	21,052	48.84
Rajasthan	82,745	77,341	— 6.53	17,619	16,608	6,415	23,023	30.67
Uttar Pradesh	285,412	270,512	— 5.22	31,751	45,991	660	46,651	66,93
West Bengal	66,550	66,407	— 0.21	28.731	16,991	11,883	28,874	0.50

9	10	11	12	13	14
Workers in Trade & Commerce (Original)	Workers in Trade & Commerce (Revised)	Percent Change (10) over (9)	Workers in Other Services (Original)	Workers in Other Services (Revised)	Percent Change (13) over (12)
4308,477	4942752	14.72	8081,545	7453,270	— 7.84
335,762	393190	17.10	669,238	611,809	— 8.58
69,319	77979	12.49	134868	126,208	— 6.42
178,214	208923	17.23	398920	368,211	— 7.70
258,463	298,209	15.38	459,093	419,347	— 8.66
21,239	24,156	13.73	76,979	74,062	— 3.79
100,793	129,051	28.04	289,683	201,425	— 9.75
244,495	261,837	7.09	455,540	438,198	— 3.81
476,333	567,539	19.15	865,746	774,540	—10.53
641,120	762,569	18.94	1068,968	947,519	—11.36
234,856	289,896	23.44	499,953	444,913	—11.01
47,175	53,751	13.94	179,345	172,769	— 3.61
236,771	261,557	10.47	408,244	383,458	— 6.07
157,498	172,466	9.50	316,791	301,823	— 4.72
555,497	608,227	9.49	1014,941	962,211	— 5.19
583,429	642,803	10.36	847,625	788,251	— 7.00

Note : Revised estimates for 1961 are comparable with the figures in the corresponding categories of 1971 and 1981 censuses. The estimates in Col. 5 & 6 are comparable with the corresponding two categories of 1971, 1981 and while those in Col. 7 are comparable with the sum total of (a) Mining, Quarrying and (b) Forestry, livestock, Fisheries, Animal Husbandry etc. of 1971 or 1981.

scholars[5], a discussion on this is avoided here.

The revised estimates of the workers in various categories, obtained by making the adjustments discussed above, as percentages to the total workforce for the 1961 census, comparable with those from subsequent censuses are presented in Table 5 to 7. In view of the fact that the proportion of female workers has experienced violent changes over time, due largely to definitional changes, it has been often considered safer to work with the data on male workers only and consequently, separate data for male workers are given in this table. The data for the year 1981 pertain to the main workers only; it is, however, seen that the inclusion of marginal workers does not alter the percentage distribution of the workforce in any significant manner.

It is unfortunate that in the absence of the data on the workers in the few minor industrial groups (ISIC) that were taken out of Livestock, Forestry etc. and combined with Cultivators and Agricultural Labourers in 1961 adjustment in the sectoral distribution of workforce is not possible. The same problem arises also with regard to the data on *agricultural services* combined with *other services* rather than with *livestock*, *forestry* etc. in 1961, contrary to the practice in the subsequent censuses. To that extent, one can argue that the workers in agriculture and in other services are overestimates while those in livestock, forestry etc. are underestimates of the actuals in 1961. It may be noted that the share of agriculture in the total workforce went up during 1961-71. This has been explained in terms of an absence of sectoral diversification and a slow growth of industries during the second half of this period. The changes in the concept of workers is unlikely to increase the proportion of agricultural workers. On the contrary, the exclusion of marginal and secondary workers from the worker category in the 1971 census should depress this proportion. Another explanation for the increase in the number of workers in agriculture, specially the agricultural labourers, could be the postponement of the census enumeration by one month (the reference period being shifted from the 1st March to the 1st April, 1971), April being the beginning of the harvesting season for the rabi crops. Comparing 1961 situation with 1981, one does not observe any noticeable difference in the agricultural component of the workforce. It may appear somewhat strange that though the dependence of the male workforce on agriculture has gone up both in rural and urban areas, the overall share of agriculture in the (male) workforce has remained unchanged or perhaps gone down marginally. This is because of the higher proportion of urban population in 1981 compared to 1961, the urban centres generally having a lower dependence on agriculture than the rural areas. It may be noted that while the non-agricultural activities moved from rural to urban areas, Urban India exhibits a higher fraction of the male workforce in agriculture because of the emergence of a large number of small (new) towns in 1981, with large agrarian base.

The share of household manufacturing workers declined during sixties but moved up marginally (provisional figures) in the

5. See Ambannavar (1977), Sinha (1982) and Natarajan (1982)

subsequent decade[6]. The fall, however, looks less dramatic when one considers the revised instead of the original estimates for 1961. The same pattern is noted in case of other services as well but with one major difference. The increase in the household manufacturing activities during the seventies has been largely an urban phenomenon while the service sector has expanded considerably in rural areas. The former can be explained in terms of the growth of urban informal sector while the latter is due primarily to the governmental programmes for rural development. Also it is evident that the urban tertiary sector is overburdened with surplus labour and it is unable to absorb many more persons. Trade and Commerce sector maintained a growth rate larger than that of the work-force during the past two decades. However, the actual increase during sixties works out to be much less than the estimate from the uncorrected data[7]. Another point to note is that the proportion of female workers in all non-agricultural activities has increased, particularly in the urban areas. This may be attributed partly to the growth of informal job opportunities in all types of industrial and tertiary activities during seventies.

Conclusion

It is seen that the revised estimates do not alter the direction of inter-sectoral change during sixties as suggested by the uncorrected data, although the magnitude of change is reduced substantially. It would, however, be erroneous to assume these changes to be inconsequential especially in a regional analysis. Empirical investigations must give importance to the magnitude as to the direction of change. Also, the effect of the revision would be different in different states and regions. Although the all India figure for the *household manufacturing* workers (revised) in 1961 is seventeen per cent less than the household industrial workers (original), the decline is more than forty per cent in Gujarat and Rajasthan (see Table 6). Similarly, the workers in *Mining, Quarrying, Livestock, Forestry etc.* have increased by more than two hundred per cent in Gujarat, Punjab and Uttar Pradesh as per the revised estimates, although the corresponding national average is only forty per cent. In case of *Trade and Commerce* category, the revision improves the figures of Kerala and Karnataka much more than the national average due to the higher incidence of hotels, restaurants etc. in these states. In case of urban areas, the aggregate percentage changes are relatively higher only in case of workers in *Trade and Commerce* and in *Other Services*, although the regional variations are somewhat less as compared to the series for the total population. It must be pointed out that as we go down to further spatial disaggregation, the changes due to the revision may work out to be very high in certain regions and would in many cases result in a reversal of the direction of change, indicated by the uncorrected data.

6. The figures computed from the Final Population Tables of the 1981 census, however, do not support this proposition.

7. It may be seen in Mitra and others (1981) that the number of towns reporting *Trade and Commerce* as their main function in 1971 is very much higher than that in 1961, with a corresponding fall in the number of Service towns. Also, there has been an accentuation of the predominant function in case of a large number of Trade and Commerce towns while for the Service towns, the trend is in favour of diversification. These can be explained largely in terms of the variations in the coverage of the Trade and Commerce and Other Services categories in the two censuses.

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URBAN GROWTH IN SOUTH ASIA

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This paper deals with two rather elementary but basic questions : (1) What exactly is the urban status of the South Asian Region (SAR) in comparison with other major less developed regions such as Africa, Latin America and South-east Asia, and the less developed countries (LDC) as a composite region ? Is the South Asian region more or less urbanised ? Has the gap in the levels of urbanisation between the SAR and LDC regions narrowed down or widened over the past few decades ? (2) What have been the urbanisation trends in the seven countries of South Asia, that is, those which now form the recently-constituted SAARC ? Are the trends in these countries comparable ? Do these countries share common sets of urban problems and prospects ?

The reason for picking up these two questions for discussion is simple : there are virtually no papers that deal with them. For some inexplicable reasons, very few attempts have been made on a regional scale to study and analyse the pace and pattern of urbanisation, though a few isolated comparative studies on urbanisation trends in Pakistan and India do exist[1]. Urban scientists and scholars have not found this region particularly fascinating for urban studies, despite the fact that this region accounts for almost 20 per cent of the LDC's total urban population. Even the recent revival of global and regional interest in urbanisation and urban-related issues as witnessed in a succession of World Bank and UNFPA publications[2] has failed to evoke much of a response in the region, with the result that our acquaintance with the SAR's overall urban policies and problems remains largely superficial, if not non-existent. There is a need for an initiative on the part of the South Asian countries to compare notes, determine mechanisms for a continual exchange of urban information, and finally to learn from each other's experiences.

As mentioned above, the scope of this paper is limited to an examination of facts on urbanisation for the South Asian Region at two levels namely : the interregional level - the SAR in comparison with other major regions, and intraregional level - the individual countries of the SAR in comparison with each other. For this purpose,

1. *See*, Leo Jacobson and Ved Prakash, *Urbanisation and National Development*, Sage Publications, 1971

2. *See*, Bertrend Renaund, "*National Urbanisation Policies in Developing Countries*", *WP No : 347* : J. Linn, "*Policies for Efficient and Equitable Growth of Cities in Developing Countries*", *WP No ; 342*, and Harry Richardson, "*City Size and National Spatial Strategies in Developing Countries*", *WP No ; 252*, all published by The World Bank, Washington D. C., and UNFPA, Population and the Urban Future, Rome, 1980.

the paper has relied almost wholly on the United Nations estimates of urban population[3], partly because these were easily accessible, and partly because of the essentially uniform methodology adopted by the United Nations for arriving at these estimates. The differences between the UN estimates and the actuals are marginal, and do not in any way alter the general urbanisation trends and conclusions[4].

THE SAR'S URBAN STATUS

A set of three tables showing the urban status of the South Asian Region vis-a-vis other major regions in the less developed region of the world are presented at the outset of this section. Table 1 gives the most recent (1980) levels of urbanisation in the SAR and other regions. In Table 2 are shown the changes in the levels of urbanisation that have taken place in the SAR and other regions between 1950-80. Table 3 gives the urban population growth rates for these regions.

Three features stand out from these tables. **First** and foremost is that the South Asian Region enjoys, or rather suffers from, a low level of urbanisation. In fact, with only 21.5 per cent of its total population of a little over 893 million living in urban areas, it is the least urbanised region in the world. All other major regions such as Africa (28.8 per cent), Latin America (64.7 percent), China (25.4 percent) and South-east Asia (23.1percent) have higher levels of urbanisation. In relative terms, the SAR is half as urbanised as the world as a whole, urbanisation coefficient being 0.519. Urbanisation coefficient, however, improves to 0.705 when it is worked out in relation to the LDC. It is interesting to note that the exclusion of SAR from the LDC group improves the LDC's urbanisation level considerably and brings it closer to the world urbanisation level.

Second : the level of urbanisation in the South Asian Region appears to be inching up steadily since 1950. The rate at which it is inching up, however, is much lower than that enjoyed by the LDC and other major regions. What is most significant is that in 1950, the base year for this paper, the level of urbanisation in SAR was comparable with that of the LDC and was higher in comparison with Africa (14.54 per cent), China (11 per cent) and South-east Asia (14.8 per cent). Within a span of three decades, the South Asian Region has been left way behind in the race of urbanisation, thanks largely due to the outward-looking development policies pursued in the regions (with the exception of China) and to inward-looking policies within the SAR. The gap in the level of urbanisation which was relatively minor in 1950 has significantly increased over these years.

Third : the most striking feature observed from the above set of tables is that while the urban population growth rates in other parts of the world have begun either taper off or are showing signs of turbulence, the South Asian Region conti-

3. *See* United Nations, *Patterns of Urban and Rural Population Growth, Population Studies, No. 68*, New York, 1980.

4. Compare UN estimates with actuals : India : UN estimates place India's urban population at 154 million for 1980. The actuals in 1981 were 159 million. Pakistan's estimated urban population for 1980 was 23.3 million. As against this, the actuals in 1981 were 23.84 million.

Table 1

Level of Urbanisation in South Asia and Major Regions 1980
(Thousands)

Region	Population		Per cent of urban to total Population
	Total	Urban	
South Asia	893,219	192,308	21.53
Africa	460,914	132,951	28.85
Latin America	371,634	240,592	64.74
East Asia (China)	907,609	230,652	25.41
South East Asia	370,854	85,863	23.15
LDC	3,184,437	972,408	30.53
World	4,373,851	1806,809	41.31

Table 2

Proportions of Population Living in Urban Areas 1950-80
(Percentage)

Region	1950	1960	1970	1980
South Asia	15.40	16.78	18.73	21.53
Africa	14.54	18.15	22.85	28.85
Latin America	41.18	49.45	57.37	64.74
East Asia (China)	11.00	18.60	21.60	25.41
South East Asia	14.83	17.52	20.02	23.15
LDC	16.71	21.85	25.82	30.53
World	28.95	33.89	37.51	41.31

Table 3

Decennial Growth Rates of Urban Population
(Percentage)

Region	1950-60	1960-70	1970-80
South Asia	33.05	42.61	47.46
Africa	55.59	62.35	65.42
Latin America	57.90	52.30	48.19
East Asia (China)	98.26	36.97	38.35
South East Asia	47.95	49.00	51.59
LDC	59.64	48.28	49.26
World	39.76	33.82	33.41

nues to register increasing growth rates in its urban population. It registered between 1950-60 a growth rate of 33.05 per cent, followed by 42.61 per cent growth during 1960-70, and an even higher growth rate of 47.46 per cent during 1970-80. A consistently higher growth rate with every successive decade has been the main characteristic of SAR's urbanisation. As against this, the trends for the LDC as a whole are no longer consistent.

It is a matter of speculation whether the urban population in the SAR will continue to increase at an increasing rate until its level begins to approximate the LDC level of 30-31 per cent or whether it will begin to show signs of an early decline. Unlike Latin America and a few individual countries where such increases have begun to taper off under the impact of substantial reduction in rural to urban migration (which have been substituted by urban to urban migrations), the SAR's growth patterns gives as yet no such indication. Rural to urban migrations still account for a significant proportion of urban population increases.

URBAN GROWTH IN SOUTH ASIA

The second question relating to the seven countries of South Asia[5] is examined below, again with the help of four corresponding tables prepared out of the United Nations estimates. Tables 4 and 5 provide data on the levels of urbanisation for the SAR countries for four reference years, beginning with 1950. In Table 6 are given data on the urbanisation trends in South Asian countries since 1950. Table 7 gives details on the growth rates of both total and urban population for these countries.

Three points by way of preface need to be mentioned at the beginning of this section. The first point refers to the wide

5. Afghanistan and Iran which are traditionally grouped with middle South Asia, have been excluded for purpose of this paper.

Table 4

Level of Urbanisation in South Asian Countries, 1980
(Thousands)

Country	Population, 1980		Per cent of urban to total Population
	Total	Urban	
Bangladesh	84.806	9,531	11.24
Bhutan	1,327	52	3.92
India	694,309	154,524	22.26
Maldives	132	14	10.61
Nepal	14,231	708	5.00
Pakistan	82,952	23,371	28.17
Sri Lanka	15,465	4,108	26.56
Total	893,219	192,308	21.53

Table 5

Levels of Urbanisation in South Asian Countries 1950-80
(Percentage)

Country	1950	1960	1970	1980
Bangladesh	4.35	5.15	7.60	11.24
Bhutan	2.07	2.46	3.06	3.92
India	16.80	17.90	19.70	22.26
Maldives	11.00	10.87	11.11	10.61
Nepal	2.29	3.13	3.92	5.00
Pakistan	17.52	22.10	24.89	28.17
Sri Lanka	14.40	17.92	21.86	26.56
Total	15.40	16.78	18.73	21.53

Table 6

Trends in Growth of Urban Population in South Asian countries, 1950-80

Country	Population (in thousands)			
	1950	1960	1970	1980
Bangladesh	1,786	2,649 (48.32)	5,150 (94.41)	9,531 (85.06)
Bhutan	15	21 (40.00)	32 (52.38)	52 (62.50)
India	59,247	76,575 (29.25)	106,994 (39.72)	154,524 (44.42)
Maldives	9	10 (11.11)	12 (20.00)	14 (16.67)
Nepal	183	285 (55.74)	440 (54.39)	708 (60 90)
Pakistan	6,387	10,135 (58.68)	15.045 (48.45)	23,371 (55.34)
Sri Lanka	1,106	1,772 (60.22)	2,736 (54.40)	4,108 (50.15)
Total	68,733	91.447 (33.05)	130,409 (42 61)	192,308 (47.46)

Table 7

Rural and Urban Population Growth Rates in South Asian Countries, 1950-80

(Percentage)

Country	1950-60		1960-70		1970-80	
	Rural	Urban	Rural	Urban	Rural	Urban
Bangladesh	24.32	48.32	28.17	94.41	20.35	85.06
Bhutan	17.01	40.00	21.75	52.38	25.86	62.50
India	19.70	29.25	24.17	39.72	23.76	44.42
Maldives	12.32	11.11	17.07	20.00	22.91	16.67
Nepal	13.79	54.74	21.33	54.39	25.31	60.90
Pakistan	18.80	58.68	27.12	48.45	31.22	55.34
Sri Lanka	23.50	60.22	20.46	54.40	16.15	50.15
South Asia	20.04	33.05	24.71	42.61	23.89	47.46

variations in size and geographical configuration that characterise this region. Thus, in terms of size, the two ends of the scales are represented by India (694 million, 1980) and Maldives (132,000, 1980), Maldives also being one of the 35 countries that have a population of less than one million. Geographically, the region consists of two land - locked countries (Bhutan and Nepal), two sea - locked countries (Maldives and Sri Lanka), and, of course, the three countries of Bangladesh, India and Pakistan. The 1100 and odd islands of Maldives (barely 200 of which are populated) have the special characteristic of being strung in a chain like fashion.

A second point of a somewhat disturbing nature that deserve to be mentioned is that the overall population growth rate in the SAR countries has been increasing with every successive decade since 1950, Sri Lanka being the only exception to this otherwise general trend. Pakistan's population, for instance, registered during 1970-80 an average decennial growth rate of 37.23 per cent as compared to 31.84 per cent in the preceding decade of 1960-70, and 25.74 per cent during 1950—60. India's total population rose by 27.83 per cent during 1970-80 as against 26.95 per cent in the preceding decade, growth rates only a shade lower than these were registered by other countries of the region.

A third point worth noting is that all countries of South Asia are low-income countries, with annual per capita income of less than US $ 400[6]. Also, with the exception of Sri Lanka which registered between 1965—83 an average annual growth rate of 2.9 per cent in GNP per capita all other countries of the SAR recorded less than 2.7 per cent increase, which was the average of the per capita increase for all low-income economies[7].

As regards the urban population growth trends in South Asia a number of conclusions can be drawn from the four tables. *One* : there are significant variations in the levels of urbanisation between these countries. As of 1980, for instance, the proportion of people living in urban areas ranged between 3.92 per cent for Bhutan and 28.17 per cent for Pakistan. The urbanisation level was very low for the other land - locked country of the region (Nepal) as well, the level being only 5 per cent in 1980. What is significant to note is that the SAR's overall urbanisation level of 21.53 per cent is overwhelmingly influenced by the inclusion of India whose exclusion from the South Asian Region depresses the region's urbanisation level to barely 19 per cent.

Two : there is an equally wide variation in the rates at which the SAR countries have urbanised since 1950. Among these countries, there is at least one country, that is, Maldives whose level of urbanisation has remained static during the past three decades. A contrast is offered by Bangladesh

6. According to ASIA 1985 YEAR BOOK (Far-Eastern Economic Review), the per capita GNP of Maldives is reported to have crossed US $ 400.

7. According to the World Bank, per capita GNP of less than US $ 400 is the cut-off point between the low-income and middle-income economics. Average annual growth rate of GNP between 1965-83 for the SAR countries are as follows : Bangladesh 0.5%, Bhutan N.A.;. India 1.5% ; Maldives N.A.; Nepal 0.1%, Pakistan 2.5%; and Sri Lanka 2.9% see, WORLD DEVELOPMENT REPORT 1985.

whose urbanisation level has shot up from a low of 4.35 per cent in 1950 to 11.24 per cent in 1980. A somewhat similar situation is also offered by Sri Lanka whose level of urbanisation has surpassed that of India within a span of three decades. This is also supported by the rates of growth in urban population which have been consistently higher for Bangladesh and Sri Lanka, and extremely low for Maldives.

Three : even though all countries of the SAR with the exception of Maldives registered high growth rates in urban population during 1950-80 period, there are two countreis, namely : Bhutan and India whose urban populations have been consistently increasing at an increasing rate. For the remaining countries, there has been some oscillation in the growth rates.

Four : the rural-urban differences in population growth rates continue to be extremely large in all countries (excepting Maldives), pointing to the fact that the role of rural to urban migration in the process of urbanisation has not yet subsided in the South Asian Region. The relative role of migration, however, is not the same, and varies between the SAR countries. For instance, the simple differentials between the urban and rural growth rates are very high for Bangladesh (59.71), Bhutan(36.66), Nepal (35.59), and Sri Lanka (34.0) and comparatively low for Pakistan (24.12) and India (20 66). In case of Maldives, the differential is negative as the rural growth rate for this country exceeds the urban growth rate. Incidentally, the countries with high differentials between urban and rural growth rates are showing clear signs of increasing "primacy", with India being a notable exception.[8]

Five : there appears to be a positive correaltion between the level of urbanisation and per capita GNP as far as SAR countries are concerned. Data in this regard are given below :

TABLE 8

GNP PER Capita and Level of Urbanisation

Country	GNP PER Capita US $ (1983)	Proportion of people living in Urban Areas 1980 (Percentage)
Pakistan	390	28.17
Sri Lanka	330	26.56
India	260	22.26
Nepal	160	5.00
Bangladesh	130	11.24

However, on account of the smallness of the sample, it would be hazardous to draw any general conclusions from this data.

Conclusion

According to the United Nations estimates, South Asia's urban population will be around 464 million by the turn of the century, increasing at the rate of approximately 55 per cent in each of the two decades. In percentage terms, its level of urbanisation will rise to 33.2 per cent by

8. Primacy index data for the SAR countries may be noted - Nepal (33), Bangladesh (31), Pakistan (24), Sri Lanka (21) and India (6); see, WORLD BANK STAFF PAPER NO. 347, "*National Urbanisation Policies in Developing Countries, Washingtan, D C*

the year 2000 from its present level (1980) of 21.5 per cent.

Prima-facie, the size of the urban problem as represented by these figures is not frightening. Nor does it seem, again on the face of it unmanageable. What do seem to be of concern, are two features of this process of urbanisation. Firstly, the numbers that are involved in this shift from a predominantly rural image that South Asia has at present, to at least a semi-urbanised society in the next 15-20 years. Between now (1980) and 2000, over 272 million people are expected to be added to the urban areas of South Asia. They will need shelter, basic services and employment. Do the countries of the South Asian Region have adequate resources to provide shelter, services and productive employment to this increasing number ? What would be the quantum of investment required for this purpose ? A recent study conducted in the context of Pakistan placed the direct investment cost per job between Rs. 21,600 and Rs. 88,700 with a mean of about Rs. 56,594. The total cost of urbanisation, 1983-2000, according to this study was estimated at Rs. 4,697 Billion at current standards, and Rs. 3,238 Billion at reduced standards[9]. The cost of urbanisation of the entire region, within the estimated urban population of about 464 million, can also be computed.

Secondly : the trends towards increasing concentration of population in a few cities. As mentioned earlier such trends are evident in at least those countries whose level of urbanisation are presently low. The remaining countries too are not spared of this newly emerging phenomenon of mega-cities. Again, quoting from the United Nations sources, six out of the 30 mega-cities (10 million +) of the world will be located in the South Asian Region. The South Asian Region or for that matter the global community has little experience to manage such large-sized cities. Are we prepared or getting prepared to manage cities of this scale ? Do we have a perception of what is in store for us by way of the emergence of mega cities ? What needs would they present ? What new systems would they require in order to be run modestly, if not efficiently ?

All available indications point to the fact that urbanisation and urban related issues have begun to receive increasing attention in the South Asian countries. The recent establishment in India of a Commission on Urban Development, the involvement of the World Bank in developing a National Human Settlement Policy for Pakistan, identification of growth centres in Nepal, preparation of a comprehensive plan for Greater Colombo in Sri Lanka, are all indications of the SAR's growing concern for such problems.

9. *See* Harry W. Richardson, "*Urban Crisis and Resource Crunch in Pakistan*", 1984 (unpublished).

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BOOK REVIEW

R. C. Chandna : A Geography of Population : Concepts, Determinants, and Patterns
Kalyani Publishers, New Delhi-Ludhiana, 1986, 234 pp.
Price Rs. 60/- hardbound & Rs. 30/- paper back.

Reviewed by Gary Fuller

Scholars belong to an international community whose interests transcend parochial concerns and permit intellectual communication across the boundaries of culture and politics. This world community often facilitates communication far more effectively than international agencies and programmes designed for that specific purpose. Nevertheless, scholarly communication is far from perfect and my receipt of Chandna's *A Geography of Population* is clear evidence of this.

I had long believed that no English language text on population geography had been published in the Third World, but I learned that the present volume is the second such published by Chandna, the first being *Introduction to Population Geography*, coauthored by M.S. Sidhu in 1980. By the same token, Chandna is clearly unaware of my editorship of *A Curriculum Guide for Population Geography* (1977). All three of these works have a common goal : to articulate population geography (largely a Euroamerican innovation) to the needs of the Third World.

This is an important goal because the demographic factors which constitute the central objects of population geographic research are most acute in the non-West. It is there that fertility and mortality are at their highest, where age structure, sex composition and dependency ratios are most distorted, and where linkages with education, literacy, and living standards are most obvious.

This work reflects Third World concerns in several ways. The examples used are heavily, but not exclusively, taken from the Third World. The literature cited departs substantially from that common to Western-oriented texts, and includes a discussion of Soviet contributions to the field. Perhaps most interestingly, one finds gentle and polite rebukes to Western authors, as, for example, in the discussion of the population geography text authored by Peters and Larkin :

"The only significant omission of literacy and education [as population characteristics] seems to be rather intriguing. Perhaps the ubiquitously high literacy rates in the West are responsible for lack of interest in the attribute on the part of the authors in reference."

Chandna's first two chapters on conceptual framework and data sources are especially valuable. His argument for the role of population geography within the discipline, and the relationships of this sub-field to other disciplines is interesting and well articulated. While I suspect that many population geographers would disagree with at least a portion of the argumentation, Chandna has nevertheless confronted a difficult issue and has handled it with aplomb. Similarly, the discussion of data sources and their reliability is well presented, but will encounter major disagreement from those population geographers who rely principally upon primary data, rather than upon published secondary sources.

Other chapters deal with distribution and density, population change, migration, composition, literacy, urbanization, policies, and competing theories of population. Not surprisingly, India's population dominates discussion throughout. And why not ? With more than 15 per cent of the world's people, with a rich tapestry of physical and cultural diversity, and with acknowledged leadership in the Third World, India logically is a major focus of population research.

The barriers to international scholarly communication cited earlier and the monumental difficulties of producing a textbook with a Third World orientation probably are responsible for the more serious flaws in this book. Although Chandna's latter chapters portray recent demographic data, his early chapters (which I suspect were written at a much earlier date) do not consider recent developments in the field. Chapter I, for example, contains no reference published after 1979. His discussion of the historical development of population geography, therefore, does not include more recent texts by Jones, by Monmonier and Schnell, and by Newman and Matzke. The lack of consideration of the Jones (1983) text is especially critical, since the publication of this excellent book was a landmark in the subdiscipline and is likely to remain a commonly used text for many years. Another important omission is Piers Blakie's (1975) book on Family Planning in India. Here, too, is an important work in population geography, and it is written exclusively on India.

From the standpoint of printing and reproduction, Chandna's book is generally acceptable. Although there are number of typographical and proof-reading errors, they offer little obstacle to a determined reader. The maps do not come off quite as well. While I suspect the original cartography is appropriate, the printing medium has not done them justice. The choroplethic intervals are not properly gauged for the scale of reproduction, with the result that spatial patterns are grasped only with great difficulty by the reader.

On balance, this book is a noteworthy contribution to the discipline, one in which Indian geographers in particular can take great pride.

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