# FERTILITY TRENDS AND DIFFERENTIALS IN UTTAR PRADESH

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***Abstract:*** *Fertility is the most important variable which affects not only population growth rate in a country but also its current size, future growth rate and structure. The present paper aims to analyze the fertility trends and differentials in Uttar Pradesh. The study is based on secondary data collected from Census of India, various journals, articles and state statistical hand book. Total fertility rate, Crude birth rate and Age specific fertility rate have been used as measures of fertility. Education and place of residence is included as differentials of fertility rate. Collected data are analyzed by using statistical techniques and cartographic method. Findings shows that Total fertility rate, Crude birth rate and Age specific fertility rate decline from 2001 to 2011 due to the development of socio economic and cultural factors.*

***Key Words:*** *Fertility, reproductive, population, crude birth rate (CBR), Total fertility rate (TFR).*

## 1. INTRODUCTION:

India is the second largest populated country in the world which accounts about 1.21 billion population. India is a socio economically backward country because of large population base, high population growth rate, high dependency ratio, low literacy rate, low per capita income, high fertility and mortality rate etc. Uttar Pradesh is a largest population concentrates state in India. Fertility may be defined as the actual reproductive performance of an individual, a couple, a group, or a population. The fertility data were collected by asking all women of reproductive age (15-49 years) to provide complete birth histories of all children they had given birth to, those who were currently living with them, those who were living away, and those who had died. Fertility is one of the three principal components of population dynamics, the others being mortality and migration (United Nations, 1973). Total fertility rate (TFR) which is considered to be a good measure of reproductive performance is defined as "the total number of children that would ever be born to a (hypothetical) group of women, if the group passed through its reproductive span of life with these rates in each year" (Communication Action Research Centre, ISI, Calcutta, p. 34). The level of fertility in a population affects not only its current size, but also has a significant impact on its future rate of growth, as well as the current and future age structure of the population. Study of fertility differentials is useful in identifying the factors which determine fertility level among various sub groups. There are several factors which are responsible for fertility differentials. These include ecological factors, regional differences, rural urban residence, educational attainment, economic status, occupation, employment of woman, religion, cast, race, age and sex structure etc...Therefore, for study of fertility differentials several factors combined together are always taken in to consideration. The identification and explanation of spatial variation in fertility has been considered as an important component of the sub disciplines of population geography and spatial demography.(Boyle 2003,Coward 1986,jones 1984).There are few studies that attempted to explain the variation of fertility in the districts of India, mainly using data from the Indian census. Bhat (1996), using 1991 census data of selected districts of India, found that joint family (other than nuclear family), the proportion of Muslims, the proportion of scheduled tribes, child mortality, unmet need for contraception, and agricultural and child labor have strong positive effects, while female age at marriage, female literacy, media exposure, and population density have negative effects on fertility. Dreze and Murthi (2001), using district level data from the 1981 and 1991 census, showed that female education and child mortality are important factors in explaining fertility differentials among districts of India. While districts with a higher proportion of Muslims tend to have significantly higher fertility, it was not so with respect to scheduled tribes. Their study shows that region is an important factor in explaining fertility differentials. Recently fertility rates have been found to be declining in India, but there are great inter- and intra-regional variations. Fertility differentials are not observed in those parts of the country where fertility decline has become well established. But some regions still have high fertility levels and have fertility differentials by education, income, occupation, etc. Different fertility regulation mechanisms such as use of modern contraceptives, termination of pregnancies and delayed marriages that have contributed much towards fertility reduction in urban areas are not available in rural areas to play similar roles (Markos, 1997).Fertility is a dynamic elements in demography. In general to understand fertility, not only the study of major portion of all demographic characters, but study of fundamental elements in social structure and the human condition are necessary. (Day-1983).

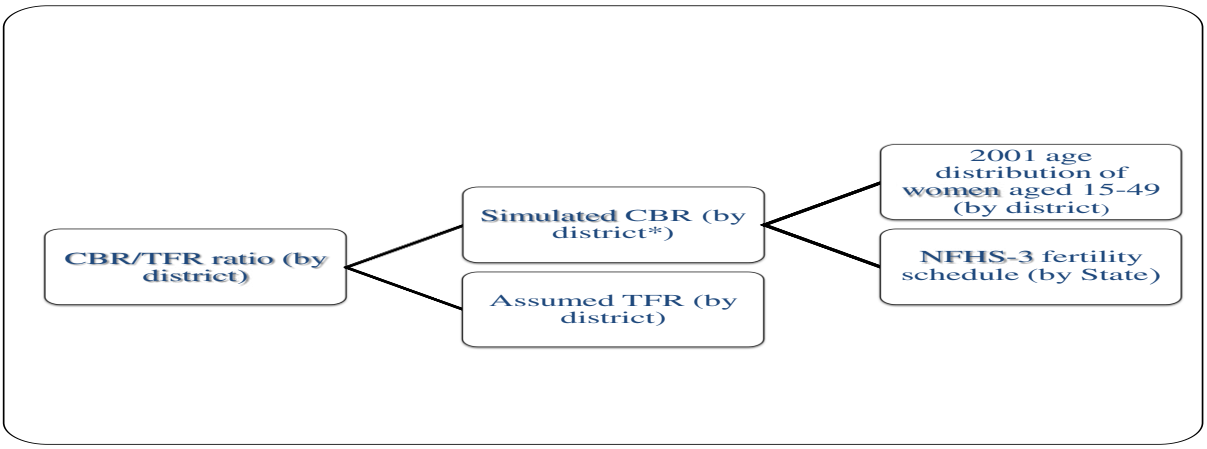
Average fertility rate in India is lower than U.P. According to 2011 Total Fertility rate in U.P was 3.6 per woman and 2.6 in India. Cured Birth rate is also high in Uttar Pradesh in 2011. It was 27.4 in U.P and 21.2 in India. The main aims and objectives of this study is to investigate the fertility trends and differentials in Uttar Pradesh during

five decades from 1971 to 2011 and district level variations has also studied in terms of total fertility rate and crude birth rate. In recent years Socio-economic development, adaptation of different govt. family planning programs, contraceptive use and abortion are the main causes for fertility decline in Uttar Pradesh.

## 2. DATA BASE AND METHODOLOGY:

The present study is mainly based on secondary data, which is collected from District census handbook, Census of India, Vital statistic, SRS, Compendium (1971-2008), various journals and statistical abstract of Uttar Pradesh from 1971 to 2011.An attempt has been made to tabulate, analyze and interpret data by applying suitable statistical and cartographic techniques. Spatial variation in fertility rates has been shown on maps by using choropleth method and bar diagram. Districts are categorized into three broad groups, i.e. High, Medium and Low. The districts level estimate of TFR and CBR trend analyses are based on Guilmoto and Rajan (2011) estimates.

**Figure . Estimation of the ratio of birth rates to fertility rates (Guilmoto and Rajan (2011)**

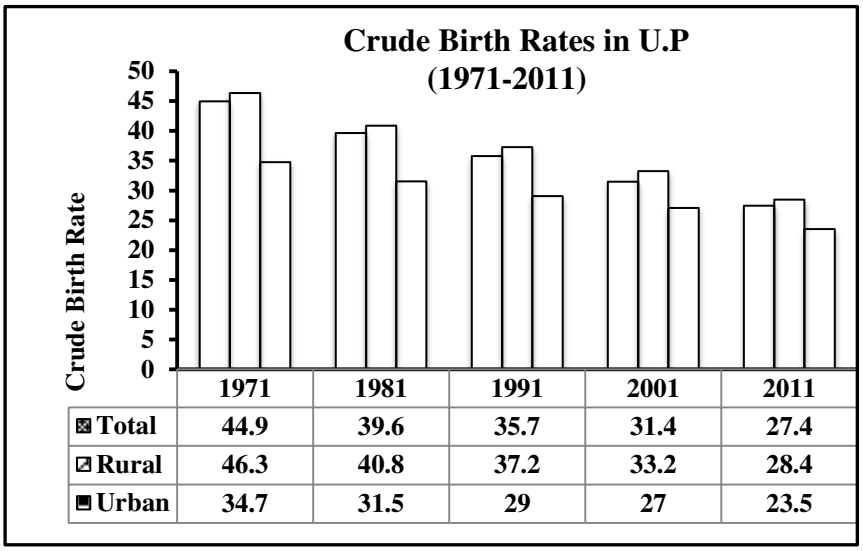



## 3. FERTILITY TRENDS AND DIFFERENTIALS:

Fertility change is a time taking process which is examining from various surveys, census and sampling. The fertility showed a significant declining trend in Uttar Pradesh particularly after the 1981. In the present paper we have chosen three indicators for the study of fertility rate in Uttar Pradesh. These are namely crude birth rate (CBR), total fertility rate (TFR) and age specific fertility rate. The fertility rate declined continuously both in the rural and urban areas. The data on these three indicators has been given in the (Table 1), separately for urban and rural areas from 1971 to 2011.

## 4. RESULTS:

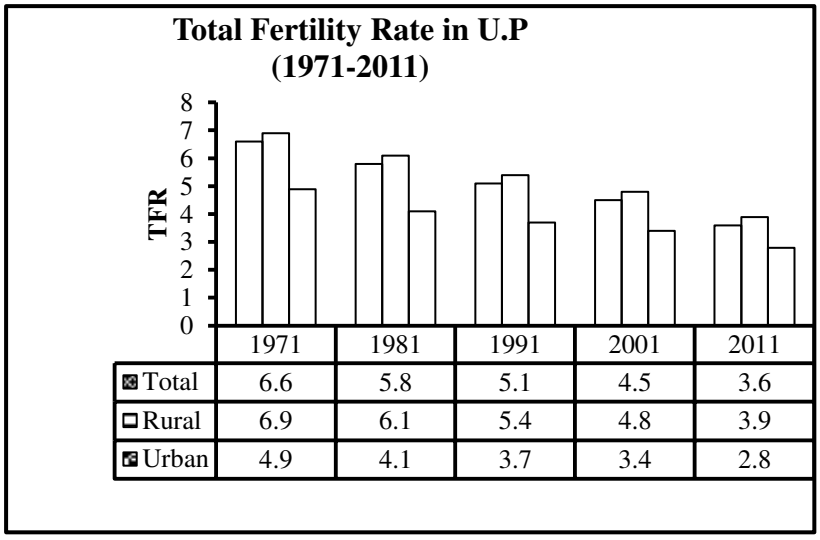
The crude birth rate is refers to number of live births in a population in a year per one thousand persons. In spite of consistent decline over time, the crude birth rate for the state remained relatively on the higher side (see figure). The CBR for the state has declined from nearly 44.9 in 1971 to less than 27.4 live births per 1000 population in 2011. Crude birth rate has been high in rural areas than in the urban areas. It was 46.3 in rural areas and 34.7 in urban areas in 1971.




| | 1971 | 1981 | 1991 | 2001 | 2011 |
|---|---|---|---|---|---|
| Total | 44.9 | 39.6 | 35.7 | 31.4 | 27.4 |
| Rural | 46.3 | 40.8 | 37.2 | 33.2 | 28.4 |
| Urban | 34.7 | 31.5 | 29 | 27 | 23.5 |

Fig 1

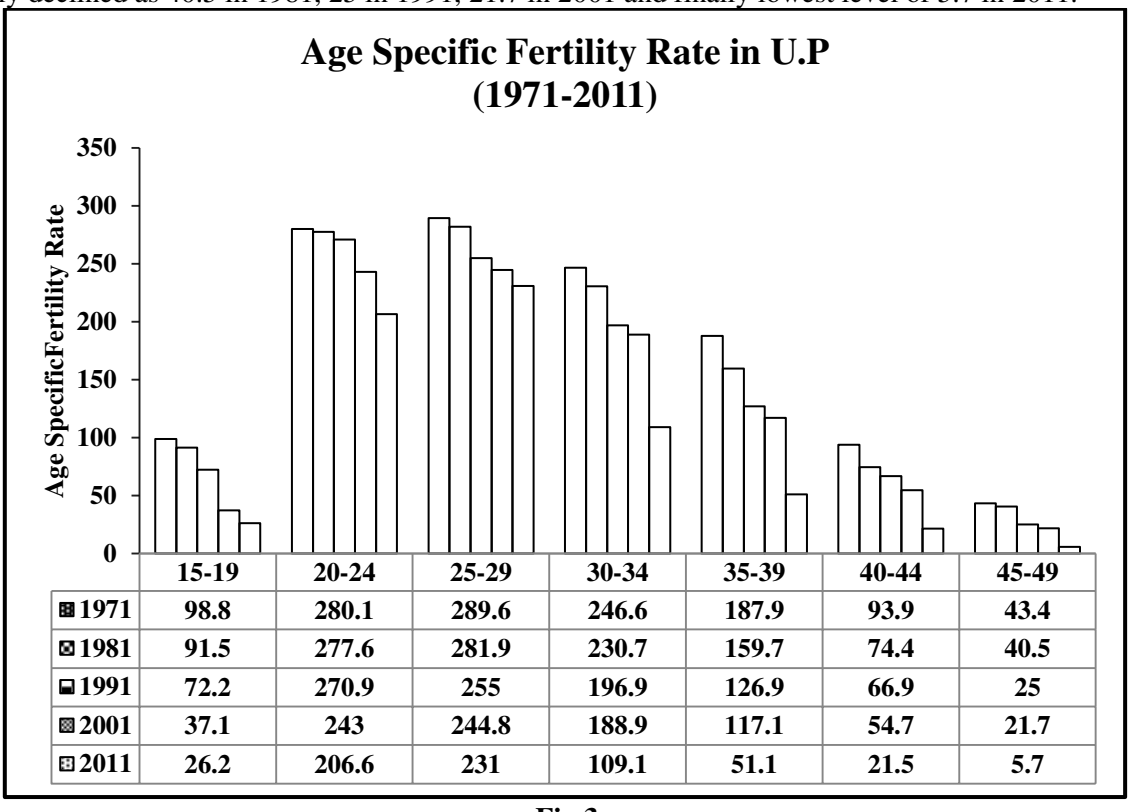
Total fertility rate (TFR) is the average number of children that would born to a woman by the time she ended childbearing if she were to pass though all her childbearing years conforming to age specific fertility rates of given year. In the demographic literature TFR of 2.1 children per woman is considered as the replacement level fertility. Table. 2 and fig. 2 indicate that total fertility rate has significant decline during five decades. It was 6.6 in 1971, 5.8 in 1981, 5.1 in 1991 & 4.5 in 2001, while it was lowest (3.6 child per woman) in 2011.




| | 1971 | 1981 | 1991 | 2001 | 2011 |
|---|---|---|---|---|---|
| Total | 6.6 | 5.8 | 5.1 | 4.5 | 3.6 |
| Rural | 6.9 | 6.1 | 5.4 | 4.8 | 3.9 |
| Urban | 4.9 | 4.1 | 3.7 | 3.4 | 2.8 |

Fig 2

The average number of children that would be born to a woman by the time she ended childbearing if she were to pass through all her childbearing years conforming to the age-specific fertility rates of a given year. From 1971- 2011, highest ASFR have recorded in the age group of 25-29 except in 1991 when ASFR was highest in 20-24 age group. The lowest age-specific fertility rates were recorded in age category of 45-49. It was 43.4 in 1971 and then continuously declined as 40.5 in 1981, 25 in 1991, 21.7 in 2001 and finally lowest level of 5.7 in 2011.




| | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 |
|---|---|---|---|---|---|---|---|
| 1971 | 98.8 | 280.1 | 289.6 | 246.6 | 187.9 | 93.9 | 43.4 |
| 1981 | 91.5 | 277.6 | 281.9 | 230.7 | 159.7 | 74.4 | 40.5 |
| 1991 | 72.2 | 270.9 | 255 | 196.9 | 126.9 | 66.9 | 25 |
| 2001 | 37.1 | 243 | 244.8 | 188.9 | 117.1 | 54.7 | 21.7 |
| 2011 | 26.2 | 206.6 | 231 | 109.1 | 51.1 | 21.5 | 5.7 |

**Fig.3**

## 5. FERTILITY DIFFERENTIALS IN UTTAR PRADESH:

There are three indicators have been used for the study of Total fertility rate differentials in Uttar Pradesh. These are rural and urban differentials, woman education differentials and religious differentials.

Religion is the most determinant differential factor. Table shows that in Uttar Pradesh total fertility rate is higher among the Muslims than Hindu due to socio- economic and cultural factors . Total fertility rate among

Muslims and Hindus was 5.8 and 4.8 in 1991. In 2001 total fertility was decline but still Muslim (4.3) fertility rate is higher as compared to Hindu (3.7).

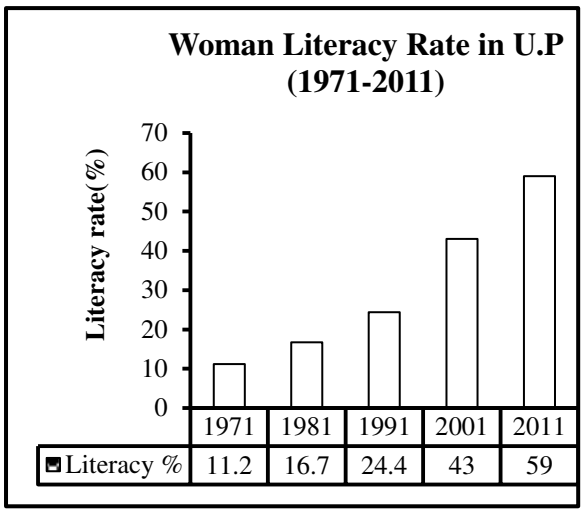



Fig 4

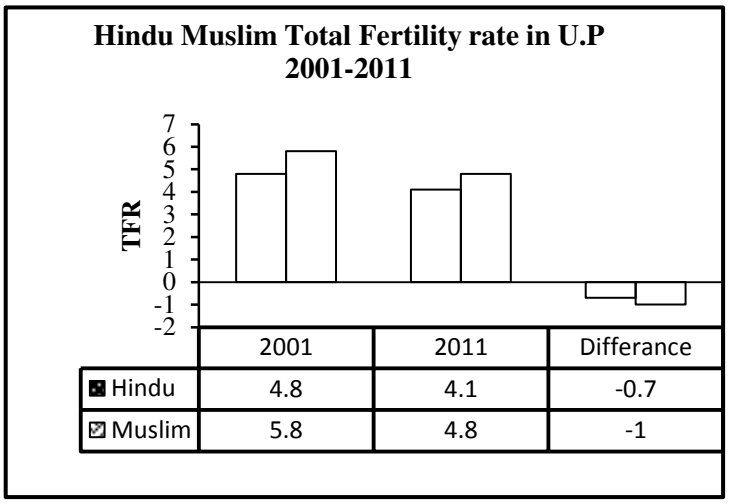



Fig 5

It is well known that the fertility of a woman is negatively associated with her level of education. Education exposes women to information, empowers women, makes them more likely to be employed outside their home environment, makes them more aware of their own health and the health of their children – all of which are negatively associated with the number of children she will have during her reproductive life. In Uttar Pradesh TFR has continuously decline (6.6 children per woman in 1971 to 3.6 in 2011) due to increasing woman literacy rate i.e.11.2% in 1971 to 59% in 2011 and TFR.

In rural areas total fertility rate (TFR) in U.P is still higher than urban areas. Rural-urban differences in the socio-economic variables play an important role in the decision making of parents regarding the number of children. In Uttar Pradesh in 2001 and 2011 total fertility rate was 4.8 &, 3.9 for rural areas while it was comparatively lower in urban areas i.e. 3.4 & 2.8 respectively.

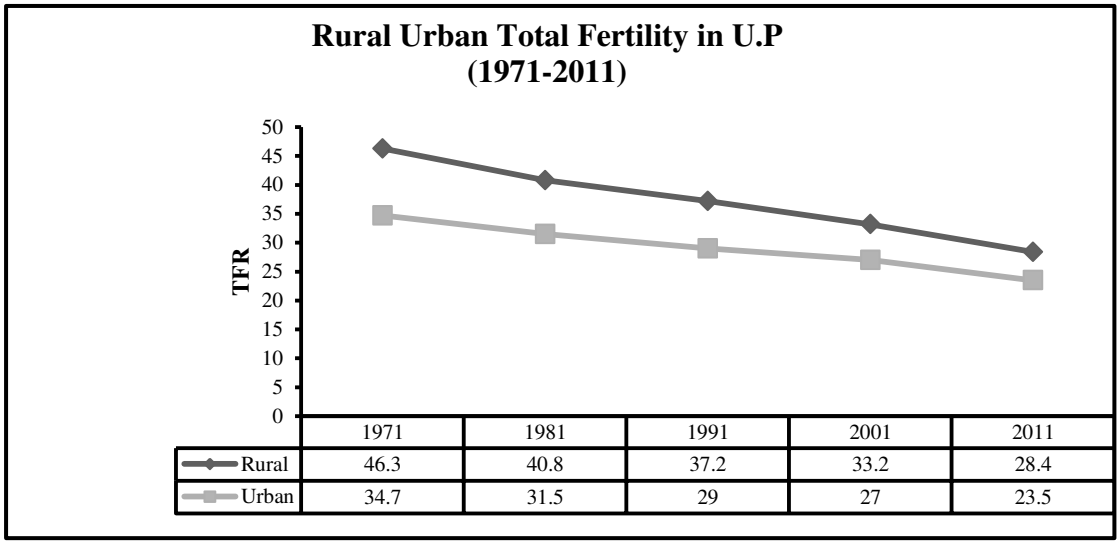



Fig 6

## 6. DISTRICT WISE FERTILITY PATTERNS IN UTTAR PRADESH:

The fertility transition and population stabilization in India is of global significance due to its size and regional diversity in the level of socio-economic development. The present study aims to explore fertility trends and differentials in U.P.

The Crude Birth Rate is marked with notable variations in its distribution among the districts of the state. Crude Birth Rate varies from 37.7 in Badaun to 20.7 in Kanpur Nagar district with the state average of 31.4 in 2001. The Crude Birth Rate of each district of U.P. has been categorized into three grades of <28.86 percent (low), 28.86-34.78 (medium), and > 34.78 (high).The spatial variation in crude birth rate has been depicted in Fig.1 a. The figure shows that high crude birth rates are found mainly in the Badaun followed by Maharajganj, Chitrakoot,

Siddharthnagar, Bahraich, Rampur and southern districts of Sonbhadra and Lalitpur. Low crude birth rates are mainly found in north western and central districts of state, while rests of the districts are fall in the medium category of the crude birth rate.

The crude birth rate in 2011 varies from 31.8 in Bahraich to 16.3 in Kanpur Nagar among the districts with the state average of 24.8. This distribution may conveniently be arranged into three grades as shown in Fig.2 a. A continuous region of high rates (>27.90) is found in the north central districts namely Bahraich (31.8) followed by Shrawasti, Balrampur and Sidhharthnagar. Some southern districts are also fall in this category. Low rates (<22.14) are mainly confined in the southern and eastern parts of the state. The rest of all districts come under the medium category.

The variation in crude birth rate varies from 10.4 in Maharajganj to 2.4 in Shrawasti district with the state average of 6.6 during 2001-2011. These variations may be conveniently be grouped into three grades of < 5.07 (low), 5.07-8.53 (medium) and > 8.53 (high).

It would be seen from the Fig.3. a. that the districts of high variations in crude birth rate cover north western and eastern parts of state with the exception of Chitrakoot which lie in southern region. The districts under the category of low variations in crude birth rate are mainly concentrated in north eastern districts and developed districts of western Uttar Pradesh mainly Agra and Shrawasti. Rest districts show medium change in crude birth rate during 2001-2011.

The spatial distribution of total fertility rate in 2001 has been depicted in Fig.1.b. It varies from 5.5 in Badaun to 2.6 in Kanpur Nagar with the state average of 4.4 according to 2001 census. These percentage figures have been grouped into three suitable ranges of <4.21, 4.21-4.69 and > 4.69. Areas of high total fertility rate (>4.69) cover almost whole of the northern region of state in the form of a continuous belt except some southern districts of Chitrakoot, Lalitpur and Sonbhadra. Low fertility rates are mainly found in the relatively developed districts of Ghaziabad, Baghpat, Meerut, Agra in western region, Kanpur, Lucknow and Faizabad in central and Varanasi in Eastern parts of the state. Medium category districts are distributed in eastern Uttar Pradesh and in some pockets of western region also.

The total fertility rate in 2011 varies from 4.7 in Balrampur to 2.2 in Kanpur Nagar among the districts with the state average of 3.6. This distribution may conveniently be arranged into three grades as shown in Fig.2. b. The 2011 high fertility rate distribution shows almost similar trend as of 2001 distribution .A continuous region of high rates (>3.88) is found in the north central and northern districts. Some southern districts are also fall in this category. Low rates (<3.40) are mainly confined in the southern and eastern parts of the state with the exception of Ghaziabad and Meerut which lie in western region. The rest of all districts come under the medium category (3.40-3.88).

The variation in total fertility rate varies from 1.3 in Gorakhpur to 0.2 in Balrampur district with the state average of 0.8 during 2001-2011. These variations may be conveniently be grouped into three grades of < 0.54 (low), 0.54-1.06 (medium) and > 1.06 (high). It would be seen from the Fig.3.b that the districts of high variations in total fertility rate cover north eastern and eastern parts of state with the exception of Firozabad, Bareilly and Pilibhit which lie in central region. The districts under the category of low variations in total fertility rate are Agra, Kanpur Nagar, Farrukhabad, Baghpat and some districts of northeast also, like Siddharthnagar, Balrampur and Shrawasti. Rests of the districts which show medium change in total fertility rate during 2001-2011, are distributed almost in every region of Uttar Pradesh.

## 7. DISCUSSION:

Results indicate that fertility reduction in districts of Uttar Pradesh during 2001-2011 was at varying degree. In study area fertility level among the districts seems to be a great degree of variation. During 2011 there are so many districts in U.P have confined very high fertility than other states in India.

Table.4 and fig.1 have shown that TFR and CBR during 2001 to 2011 have declined in state and also in districts of U.P. The TFR is highest in Badaun (5.5) and lowest in Kanpur Nagar (2.6) district during 2001. In 2011 TFR is highest in Balrampur, (4.7) and lowest in Kanpur Nagar (2.2) districts. Changes have also estimated highest (1.3) in Gorakhpur, Maharajganj and Pilibhit and lowest (0.3) in Agra and Shrawasti districts. The TFR in rural areas is higher than in urban area in Uttar Pradesh. During 1971 TFR was 6.9 in rural areas as compared to 4.9 in urban areas. But it was continuously decline in rural areas as 6.1 in 1981, 5.4 in 1991, and 4.8 in 2001 and3.9 in 2011.

On the other hand CBR has declined during 2001 to 2011 in the state and districts level. In the year 2001 and 2011 highest CBR has estimated in Badaun (37.7), Bahraich (31.8) and lowest in Kanpur Nagar (16.3). CBR change was highest in Maharajganj(10.4) and lowest in Shrawasti (2.4) district. It seems to be estimate that CBR in rural and urban areas has declined slowly. Rural CBR is higher than urban CBR in the state, for rural areas it was 46.3 in 1971 and then decline up to 28.4 in 2011.In urban area it was 34.7 in 1971 and 23.5 in 2011.

Age specific fertility rate during 2001 to 2011 has significantly decline in all age groups in Uttar Pradesh. In the year 2001and 2011 highest ASFR has found (244.8 and 231) in age group of 25-29 and lowest ASFR has estimated in the age group of 45-49. Age specific fertility rate in rural and urban areas is varying year to year among age groups.

ASFR in rural areas was highest (260.5) in 20-24 age groups in 2001, but in urban areas it was highest (209.5) in 25-29 age group in 2001.This type of differences may be found due to the age at marriage.

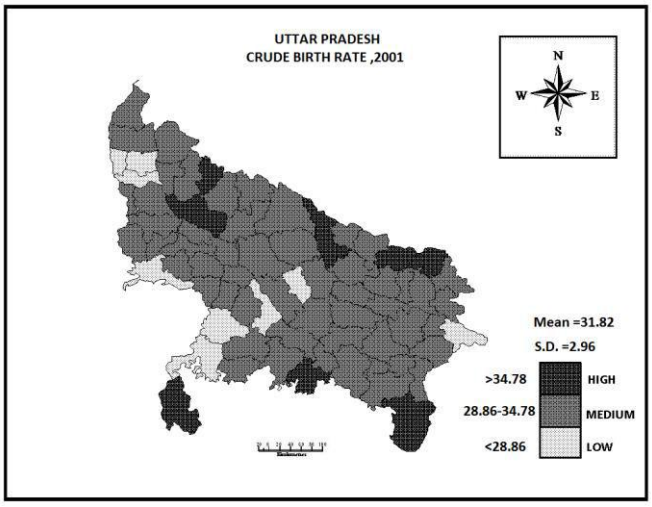



fig-1a

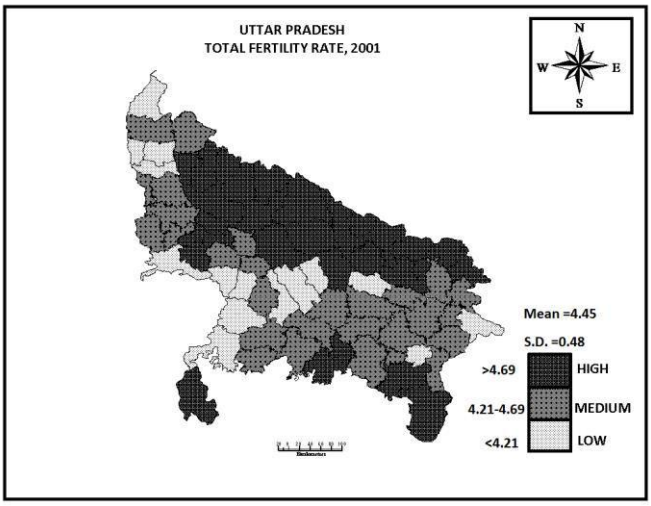



fig-1b

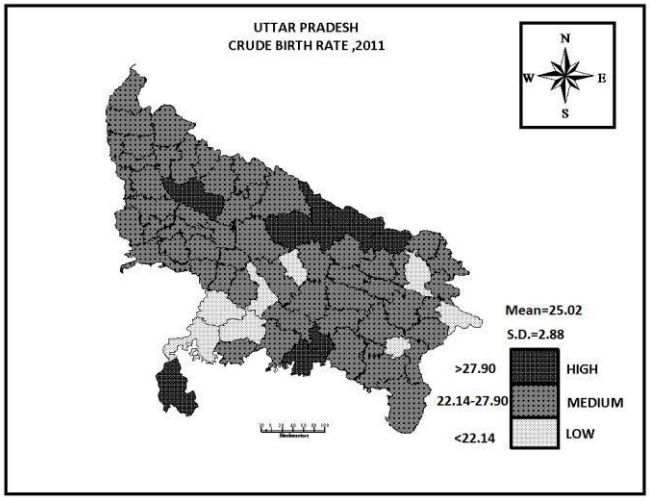
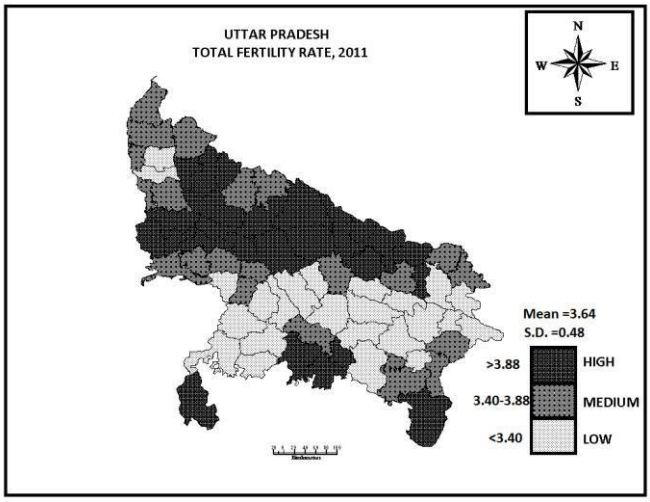



fig-2a

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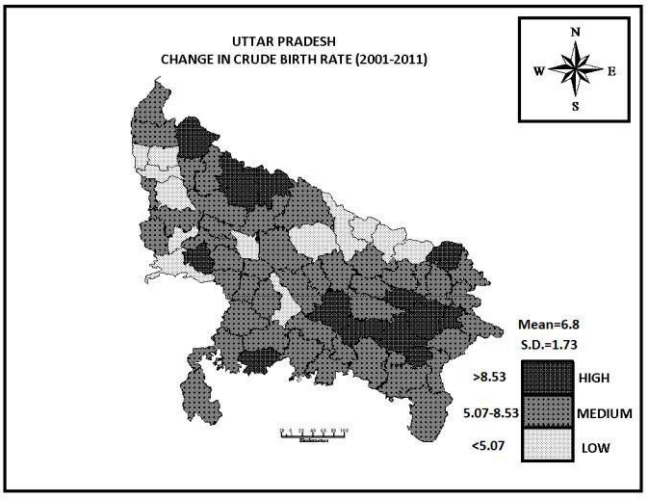


fig-3a

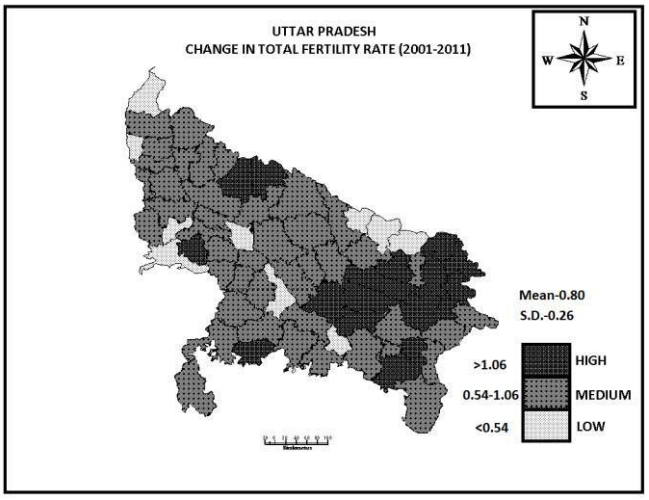


fig-3b

## 8. **CONCLUSION:**

It is clear from the above analysis that fertility level in Uttar Pradesh has declined in the last decades, i.e., from 1971 to 2011. The fertility transition is usually go with socio-economic changes which include the education, improved health, provision of income to the deprived and exposure to modern ideas that promote fertility decline.

The fertility rate in Uttar Pradesh seems to continue declining due to population control policies, family planning programs etc continue with a strong support. Based on our analysis, we suggest that there is a greater need for strong

political commitment to make family planning successful and to increase the accessibility and availability of contraception at districts level. The high fertility may not only affect the average progress at the household and individual level but also affects the average socio economic development in state and county. The results indicate that factors such as women's years of schooling, age at marriage for women, proportion of Muslim population and level of urbanization are significant fertility differentials factors in the districts of Uttar Pradesh. Emphasis on the use of modern family planning methods, increase in age at marriage of girls and reducing early childhood mortality may help in reducing fertility in these districts. However, past studies demonstrated that the increased use of modern contraception among women was one of the major causes of fertility decline in districts of India. What is now needed is the integrated, multidimensional approach, which emphasizes literacy, education (particularly for women), lowering infant mortality and providing contraceptives. Information, education and communication programs must be reinforced by Anganwari workers, ASHA or community workers at the village level who can teach the villagers - the involvement of women must be encouraged here. Perhaps at this stage local NGOs and media can be effective as they can mobilize the community programs should be adopted.

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