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An Analysis of Fertility Decline in India: Evidences from Tamil Nadu and Uttar Pradesh

Ajay Kumar, Saraswati Kerketta

Abstract
Using data from census of India and sample registration system, this paper traces fertility transition of Uttar Pradesh and Tamil Nadu and explains the fertility decline among the women of different age groups. There exist considerable regional disparities in terms of fertility decline in northern and southern states. The pace of fertility decline has been faster in southern and coastal regions, and at a slow pace in backward northern state. In Tamil Nadu fertility declined substantially among the women of lower and higher age groups in comparison to Uttar Pradesh characterized by low literacy, low female age at marriage, poor health infrastructure and low status of women.

Keywords: Fertility Transition, Replacement Level, Total Fertility rate, Crude Birth Rate

Introduction

Fertility transition generally mean to a phenomena in which fertility gradually declines from a very high level to a low level where fertility rates come at its replacement level (2 children per women). While the process in which mortality and fertility rates fall from high to low levels in known as the demographic transition (Visaria *et.al*, 1995) [23]. Fertility transition is a narrower concept than demographic transition; the latter also incorporates the decline in mortality and the changes in a population age distribution caused by changing vital rates.

The concept of fertility transition is based upon its historical experience of population change in Europe in the 19th and the 20th centuries. Jones *et al.* (1997) reported that France was first to experience fertility decline, where birth rates started declining in 1830s. In 1840s Ireland also experienced fertility decline just after France. After that fertility decline was noticed in other European countries and rest of the countries of the world.

Almost all the developed countries in the world are currently experiencing demographic transition at varying pace and levels. India is in the midst of demographic transition to lower fertility and mortality. Since last three decades the population of India was growing at more than 2 percent annually. Though the growth rate has declined in 1990s, but it is still very high.

Guilmoto and Rajan, (2002) [4], pointed out that India is passing through its last phase of fertility transition, moving from high fertility levels to low fertility levels. But this decline in fertility is not uniform across all the states and union territories. Regional diversity in fertility transition has been remarkable. The pace of fertility decline has been higher in southern states than the northern states. Some states like Kerala and Tamil Nadu in southern India have already achieved replacement level of fertility (2 children per women), whereas some states in northern India, especially the BIMARU states, are still having total fertility rate of nearly 5 children per woman. This regional variation in fertility rates can be traced in terms of variations in the status of women, nuptiality patterns and fertility behavior of women in southern and northern states.

Among the northern states Uttar Pradesh is most populous and the poorest state. Uttar Pradesh with its population of 166.6 million (2001), contains more population than Japan, or Bangladesh, and almost equal to the whole population of Pakistan. Among the southern states Andhra Pradesh and Tamil Nadu are larger states in terms of their population size. The regional differences in the northern and southern states are remarkable in terms of their growth rates and fertility levels. The Indian population is currently growing at 1.9 percent per annum; the annual growth rate of south India is just 1.3 percent (Irudaya and Rajan, 2005) [5]. The growth rate of Tamil Nadu is around 1 percent while Kerala has already achieved its replacement level. Thus for the present study Uttar Pradesh and Tamil Nadu have been selected to compare the trends and patterns of fertility decline among the northern and southern states of India. Uttar Pradesh from north India (most populous state in India) and Tamil Nadu from south (a major state representing the demographic profile of south India) provide two diverse and contrasting pictures

in terms of spatial pattern, recent trends and the factors affecting fertility in northern and southern part of India.

Table 1: Total Fertility Rates in Major States: India, 1971-2001.

Region/States	1971	1981	1991	2001
India	5.2	4.5	3.7	3.2
Bihar	-	5.7	4.6	4.5
Madhya Pradesh	5.7	5.2	4.6	3.9
Rajasthan	6.3	5.4	4.5	4.2
Uttar Pradesh	6.7	5.8	5.2	4.4
West Bengal	-	4.2	3.2	2.6
Andhra Pradesh	4.7	3.9	3.0	2.3
Karnataka	4.4	3.6	3.1	2.4
Kerala	4.1	2.9	1.8	1.7
Tamil Nadu	3.9	3.4	2.2	1.8
Maharashtra	4.5	3.7	3.0	2.6
Punjab	5.3	4.0	3.1	2.4

Sources: estimates based on the Sample Registration System.

Objectives

The objectives of the study are:

- To study the trends of fertility decline in Tamil Nadu and Uttar Pradesh during 1971-2000.
- To examine how the women of different age groups have declined their fertility rate in the state of Tamil Nadu and Uttar Pradesh during 1971-2000
- To examine the pace of fertility decline at district level in Tamil Nadu and Uttar Pradesh during 1981-2001.

Data Base

Sample Registration System: In the absence of a complete and reliable civil registration system in India, the Office of the Registrar General established a Sample Registration System (SRS) in 1964–65 on a pilot basis. This was expanded into a full-scale system in 1969–70. Since the early 1970s, the Sample Registration System has been the authoritative source of fertility estimates for the country. The SRS provides national and state-level estimates of fertility and mortality on an annual basis. The system includes both continuous registration and six-monthly surveys to catch missed events. It is based on a nationally representative sample of villages and urban blocks. The sampling unit in rural areas is an entire village or a segment of any village with a population of 1,500 or more. In urban areas the sampling unit is a census-enumeration block with a population ranging from 750 to 1,000.

Census of India: though census of India gives information on number of children ever born and surviving at present since 1981. But it does not give any direct information about fertility rates. For the current study data on fertility have been collected from occasional papers, which are provided by census of India from time to time. Occasional paper of 1997a, (Registrar General of India) give district level estimate of crude birth rate and total fertility rate for the year 1981 and 1991. While for the year 2001, Guilmotto and Rajan (2002) [4] have estimated the district level fertility rates.

Methodology

To show the spatial pattern of fertility, spatial variation analysis has been employed. Choropleth maps have been prepared to fulfill the objective. The regional linkages of fertility have also been analyzed to show how fertility has declined from one district to another district. The speed of fertility decline for each district has also been calculated to compare the state of Tamil Nadu and Uttar Pradesh. Trends in crude birth rate and total fertility rate have been analyzed from SRS data. Trend line has also been prepared to compare the temporal pattern of fertility decline between Tamil Nadu and Uttar Pradesh with national level. SRS is the only source which gives the time series data on fertility, which is most useful for examining the trends in fertility, but in time series data fertility fluctuates from year to year, thus to eliminate the effect of fluctuation five years moving average have been calculated. Fertility does not decline with the same pace among the women of different age groups, so percentage change of fertility have been calculated to know the fertility decline among the women of different age groups.

Results

Fertility trend is an important indicator of the degree of success of the government's family planning programme. Thus assessment of the fertility trend in India has significant policy and programme implications. From 1970 onwards, annual estimates of birth rate are available from the Sample Registration System. The SRS provides annual estimates of birth rates and death rates. The annual estimates fluctuates between years, thus to eliminate to yearly random variations in the SRS estimates, five years moving average have been used.

Though both the states declined their fertility gradually but the difference can be seen even at the beginning of time series (1971) with lower levels of CBR in Tamil Nadu in comparison to Uttar Pradesh. The table 2 shows that during 1971-75 the CBR for Tamil Nadu was 30.7, and reached a level of 19.3 by 1996-2000. During the same period, Uttar Pradesh declined its CBR from 43.0 to 33.1, a comparatively slower decline, thus widening the gap between Tamil Nadu and Uttar Pradesh. At the national level CBR declined from 35.6 in 1971-75 to 26.6 by 1996-2000; this reflects that the pace of fertility decline is higher in Tamil Nadu, and lower in Uttar Pradesh than the national average.

Table 2: Trends in Crude Birth Rate in Tamil Nadu, Uttar Pradesh and India, 1971-2000.

Period	Tamil Nadu	Uttar Pradesh	India
1971-75	30.7	43.0	35.6
1976-80	29.2	41.1	33.6
1981-85	27.3	38.8	33.6
1986-90	23.0	37.0	31.4
1991-95	20.1	35.7	28.8
1996-2000	19.3	33.1	26.6

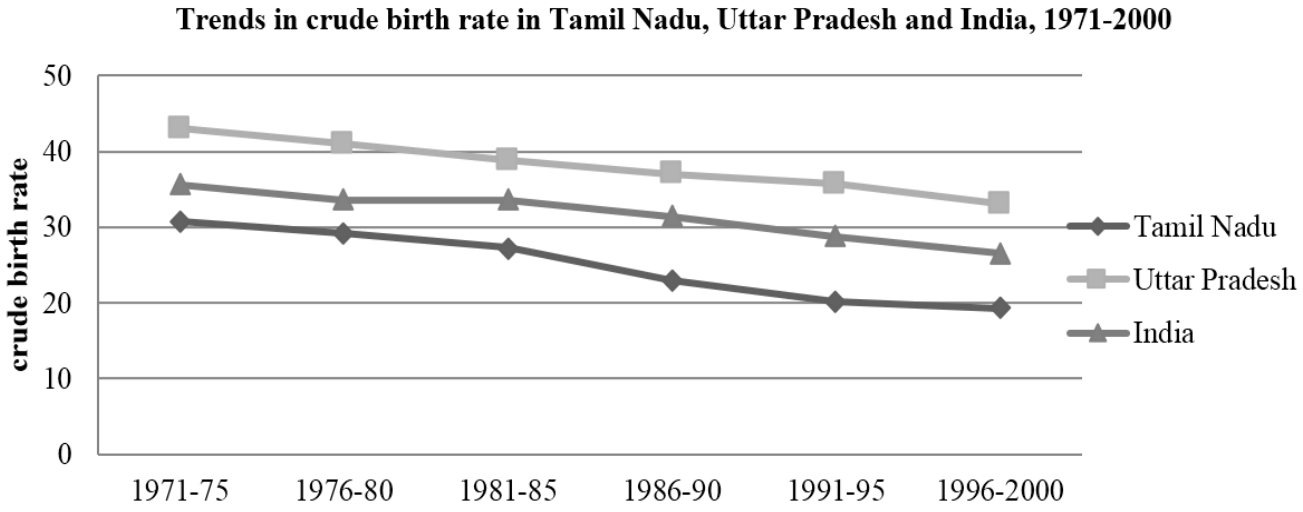
Source: Computed from SRS Bulletins India, Registrar General (1999).

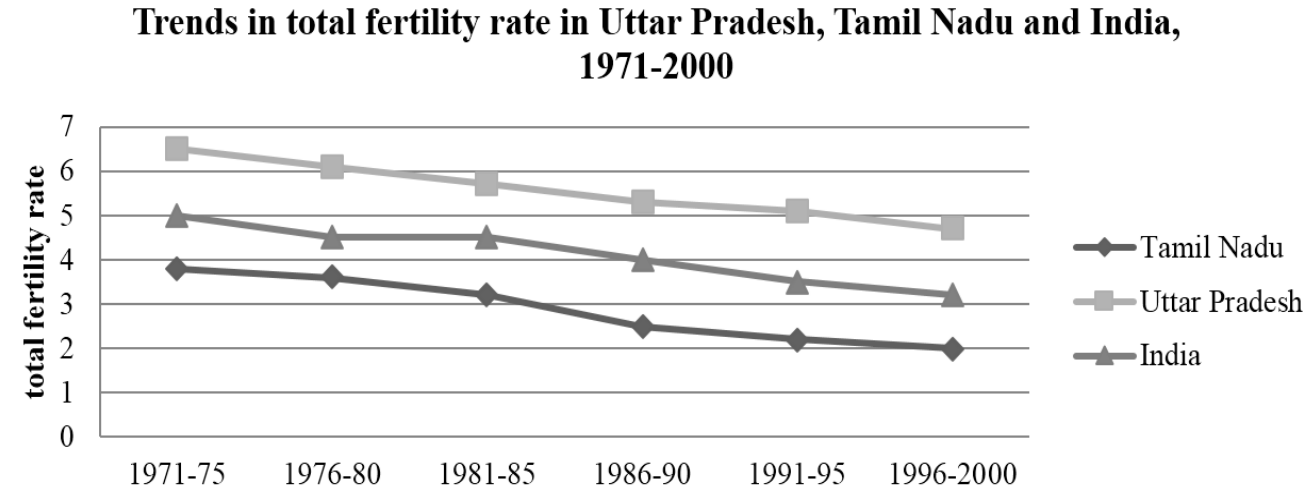
As per the SRS estimates, the TFR of Tamil Nadu was 3.8 children per woman during 1971-75, and declined to 2.0 by 1996-2000 (47.4 percent decline). During the same period, TFR of Uttar Pradesh declined from a level of 6.5 to 4.7 (only 27.7 percent decline), this indicates a slow pace of fertility transition as compared to Tamil Nadu.

Table 3: Trends in Total Fertility Rate in Tamil Nadu, Uttar Pradesh and India, 1971-2000.

Period	Tamil Nadu	Uttar Pradesh	India
1971-75	3.8	6.5	5.0
1976-80	3.6	6.1	4.5
1981-85	3.2	5.7	4.5
1986-90	2.5	5.3	4.0
1991-95	2.2	5.1	3.5
1996-2000	2.0	4.7	3.2

Source: Computed from: SRS Bulletin, India, Registrar General (1999).





Though fertility declined in both the states, but the level differed substantially. The decline in birth rates in Uttar Pradesh did not reach the level achieved by Tamil Nadu in 1971 even by 2000. Thus there was more than three decades time period gap in terms of levels of fertility decline in the two states.

Fertility does not decline with the same pace among the women of different age groups, so percentage change of fertility have been calculated to know the fertility decline among the women of different age groups. Trends in age-specific fertility rate (ASFR) reveal that how fertility has declined among the woman of different age groups over the period of time. The table 4 shows that in Tamil Nadu fertility declined consistently among women with ages 25 and above between 1971 and 2000. In percentage points, about 54 percent decline was observed in the age group 15-19, 40 percent decline in 25-29, 68 percent decline in 30-34 and more than 80 percent decline in the age group 35 and above.

In Tamil Nadu more than 10 percent decline in fertility was observed only in 30-34 age group during the period 1971-75. In the next- five-year period 1976-80 more than 10 percent decline was found in 15-19, 35-39, 40-44, and 45-49 age group. The reduction in fertility in the age group 15-19 may be due to increase in age at marriage, while other groups may be related to lower marital fertility. During 1981-85 and 1986-90 all the age groups experienced high fertility decline while the 20-24 age group experienced slow pace of fertility transition. Between 1991 and 1995 fertility increased slightly in prime fertility age groups 20-24 and 25-29, but rest of the age groups continued to decline their fertility. During the period of 1996-2000 lower age groups declined their fertility with very low pace as compared to last two higher age groups (40-44 and 45-49).

Table 4: Percentage change in age specific fertility rates in Tamil Nadu, 1971-2000

Age of woman	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000	1971-2000
15-19	12.6	-10.8	-16.9	-4.9	-32.6	-13.0	-53.5
20-24	2.7	-7.0	-1.3	-5.3	0.6	-9.0	-18.3
25-29	-3.9	-9.4	-14.2	-19.7	0.7	-0.1	-39.6
30-34	-14.3	-9.1	-31.6	-34.3	-10.9	3.0	-67.9
35-39	-4.6	-34.3	-34.1	-39.4	-25.5	-7.9	-82.8
40-44	-5.2	-17.7	-44.1	-40.4	-56.9	-25.0	-91.6
45-49	7.5	-26.4	-15.1	-75.6	-9.1	-70.0	-95.5

Source: India, Registrar General. SRS Reports/bulletin, 1971 to 2000 New Delhi: Ministry of Home Affairs

In Uttar Pradesh, during 1971-2000, fertility declined by more than 10 percent in all age groups except 20-24 age group. A remarkable decline was observed in the age group 15-19 during 1971-2000 (59 percent decline). Among the age group 15-19 a regular decline can be observed except in 1981-85. Regular decline of fertility in this age group indicates the regular increase in the age at marriage of girls. The two age groups 20-24 and 25-29 could never experience a more than 10 percent decline in fertility. A more than 10 percent point of fertility decline in age group 30-34 observed only in 1986-90 and 1996-2000. While among the age group 35-39 fertility decline by more than 10 percent during 1971-75 and 1981-85. And the fertility declined faster in the last two age-groups 40-44 and 45-49 which indicates that woman in Uttar Pradesh also want to stop to have children in higher ages.

Table 5: Percentage change in age specific fertility rates in Uttar Pradesh, 1971-2000

Age of woman	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000	1971-2000
15-19	3.1	-10.2	2.6	-23.1	-41.7	-3.8	-59.0
20-24	-2.1	1.2	1.9	-4.2	-6.1	2.2	-7.1
25-29	1.0	-3.7	-2.0	-7.7	7.5	-5.8	-10.9
30-34	0.3	-6.8	-4.7	-10.4	5.9	-10.2	-24.0
35-39	-11.9	-3.6	-16.4	-4.9	-4.6	3.7	-33.2
40-44	-4.6	-17.0	-4.8	-5.5	4.6	-22.3	-42.1
45-49	-0.2	-6.5	-14.6	-27.7	14.8	-27.2	-51.8

Source: India, Registrar General. SRS Reports/bulletin, 1971 to 2000 New Delhi: Ministry of Home Affairs

Thus the time series data which is collected from Sample Registration System shows that fertility rates has declined in both the states but the difference can be seen even at the beginning of time series with lower levels of crude birth rate and total fertility rate in Tamil Nadu in comparison to Uttar Pradesh. Fertility has declined in with much faster speed in Tamil Nadu and with lower speed in Uttar Pradesh in comparison to national average. Though fertility declined in both the states, but the level differed substantially.

Spatial Pattern of Fertility in Uttar Pradesh and Tamil Nadu

Uttar Pradesh is the most populous state in India with a population of 166 million (Census of India, 2001), which is 16 percent of the total population of the country. Only six countries including India as a whole have larger population than Uttar Pradesh. The basic demographic problem facing the population of Uttar Pradesh is its high natural growth rate estimated at 21.7 percent in 2005 (Sample Registration System, October.2006). During the last three decades compared to birth rates, decline in death rate is steeper. Birth rate of around 45 and death rate of 22.5 per thousand population during 1971-72 have now declined to a level of 30.4 and 8.7 respectively in 2005.

The demographic trends particularly fertility trends in Uttar Pradesh are vital to the demographic transition in the country. Uttar Pradesh has 70 districts divided in four regions. Wide socio-economic and demographic variations are observed in these regions. Among the districts, Allahabad is most populous while Mahoba is found to be least populous district in the state while total fertility rate and crude birth rate was found to be highest in Budaun and lowest in Kanpur Nagar in 2001.

In 1981 total fertility rate was very high in the northern and northwest part of Uttar Pradesh, while it was relatively lower in the central, eastern and Bundelkhand region of Uttar Pradesh. All the districts of Uttar Pradesh were having their TFR more than 5 in 1981, but in 1991 districts of Bundelkhand region declined their fertility and some districts of eastern region also came at lower level of total fertility rate. In 2001 two districts of Bundelkhand region like Jalaun and Jhansi and some districts of western part and Northern part of Uttar Pradesh came under the category of total fertility rate below 4 children per woman. Lucknow, Faizabad, Kanpur Nagar from central part and Ballia from eastern part were having total fertility rate below 4 in 2001, rest of the districts having their TFR more than 4 children per woman. It is interesting to note that even in 2001 no district of Uttar Pradesh could reach it replacement level of fertility. Kanpur Nagar, which was having the lowest TFR (2.6 children per woman) was also at much higher level than the replacement level of 2 children per woman.

If we examine the fertility decline over a period of 30 years (1971-2001) at district level then it is observed that the districts, which were having higher fertility in 1981, declined their fertility faster, and the districts, which were having relatively lower fertility in 1981, did not decline their fertility as fast as earlier ones.

Table 6: Changes in Total Fertility Rate and Crude Birth Rate in Uttar Pradesh (1981-2001)

District	CBR 1981	CBR 2001	% Decline	TFR 1981	TFR 2001	% Decline
Bijnor	42.93	33.0	-23.13	6.90	4.6	-33.33
Moradabad	42.47	34.3	-19.23	6.80	5.0	-26.47
Rampur	43.62	35.5	-18.61	7.20	5.1	-29.16
Saharanpur	39.24	29.5	-24.82	6.10	4.0	-34.42
Muzaffarnagar	38.67	31.9	-17.50	6.20	4.4	-29.03
Meerut	39.76	27.6	-30.58	6.20	3.9	-37.09
Ghaziabad	40.50	28.7	-29.13	6.10	3.9	-36.06
Bulandshahar	40.59	29.8	-26.58	6.60	4.4	-33.33
Aligarh	40.56	30.7	-24.30	6.50	4.5	-30.76
Mathura	38.80	32.0	-17.52	6.30	4.6	-26.98

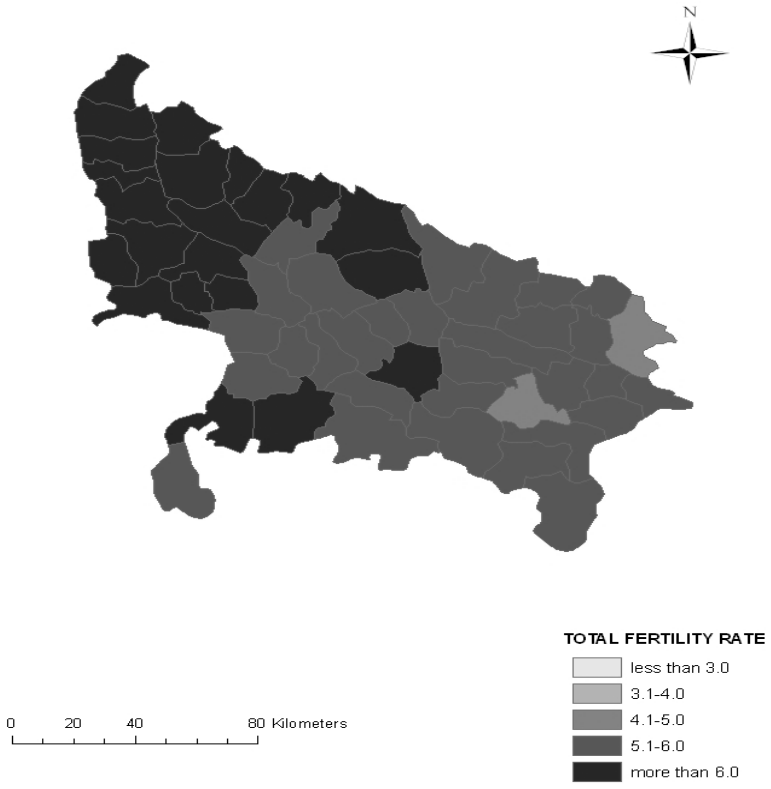
Agra	41.07	28.3	-31.09	6.30	3.8	-39.68
Firozabad	41.07	34.1	-16.90	6.30	4.8	-23.80
Etah	39.67	34.1	-14.04	6.40	4.9	-23.43
Mainpuri	39.52	31.1	-21.30	6.20	4.4	-29.03
Budaun	41.06	37.7	-8.18	6.70	5.5	-17.91
Bareilly	39.80	34.1	-14.32	6.40	4.9	-23.43
Pilibhit	39.89	33.9	-15.01	6.30	4.9	-22.22
Shahjahanpur	40.44	33.7	-16.66	5.50	4.8	-12.72
Kheri	38.09	32.8	-13.88	5.90	4.7	-20.3
Sitapur	39.43	33.0	-16.30	5.20	4.7	-9.61
Hardoi	42.16	33.8	-19.82	6.60	4.8	-27.27
Unnao	38.01	29.5	-22.38	5.80	4.1	-29.31
Lucknow	36.36	24.2	-33.44	5.20	3.1	-40.38
Rai bareli	40.92	31.6	-22.77	6.00	4.3	-28.33
Farrukhabad	39.49	30.3	-23.27	6.20	4.3	-30.64
Etawah	37.94	29.7	-21.71	6.00	4.0	-33.33
Kanpur Dehat	37.27	29.0	-22.18	5.50	4.2	-23.63
Kanpur Nagar	37.27	20.7	-44.45	5.50	2.6	-52.72
Jalaun	37.35	27.0	-27.71	5.60	3.7	-33.92
Jhansi	38.11	26.2	-31.25	5.60	3.4	-39.28
Lalitpur	42.31	36.1	-14.67	6.50	4.9	-24.61
Hmirpur	37.98	31.0	-18.37	5.80	4.3	-25.86
Banda	39.85	34.0	-14.68	6.10	4.3	-29.50
Fatehpur	37.99	31.8	-16.29	5.90	4.5	-23.72
Pratapgarh	40.15	31.5	-21.54	5.80	4.2	-27.58
Allahabad	39.69	32.0	-19.37	5.80	4.5	-22.41
Bahraich	38.61	35.0	-9.34	5.90	5.0	-15.25
Gonda	39.69	33.5	-15.59	5.80	4.8	-17.24
Bara Banki	35.39	33.1	-6.47	5.30	4.7	-11.32
Faizabad	37.30	30.0	-19.5	5.40	4.1	-24.07
Sultanpur	40.87	32.3	-20.96	5.80	4.4	-24.13
Siddharthnagar	41.29	36.1	-12.56	6.00	5.1	-15.00
Maharajganj	40.41	36.2	-10.41	5.80	5.0	-13.79
Basti	41.29	33.4	-19.10	6.00	4.8	-20.00
Gorakhpur	40.41	29.9	-26.00	5.80	4.3	-25.86
Deoria	39.97	32.4	-18.93	5.80	4.6	-20.68
Mau	34.09	33.8	-0.85	5.00	4.6	-8.00
Azamgarh	40.20	33.1	-17.66	5.80	4.5	-22.41
Jaunpur	41.83	32.1	-23.26	5.90	4.3	-27.11
Ballia	34.09	28.4	-16.69	5.00	3.8	-24.00
Ghazipur	37.69	31.8	-15.62	5.30	4.3	-18.86
Varanasi	37.65	31.0	-17.66	5.40	4.3	-20.37
Mirzapur	37.30	33.5	-10.18	5.60	4.7	-16.07
Sonbhadra	37.30	35.3	-5.36	5.60	4.8	-14.28
Uttar Pradesh	39.42	31.4	-20.34	5.90	4.4	-25.42

Note: The average has been taken for the districts, which were separated in 2001

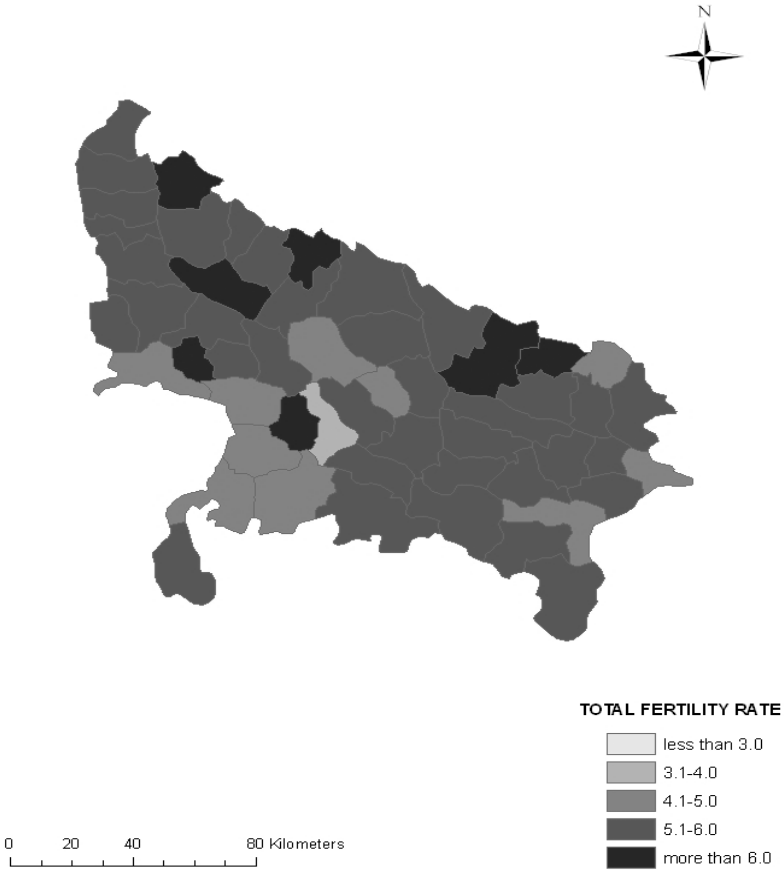
Though this rule of fertility decline does not apply on all the district of Uttar Pradesh but most of the districts of Uttar Pradesh follow this general pattern. Kanpur Nagar and Lucknow two are the good example here, which were having relatively lower fertility rate than other districts in 1981; they also declined their fertility much faster than the other districts. On the other hand Budaun, Baharaich, Sidharthanagar and Maharajganj are the example of not declining their fertility rapidly even having high fertility rate in 1981.

Though Tamil Nadu has reached a fairly low level of fertility, but there are notable spatial variations. We can get a clear picture of fertility decline from three choropleth maps (1981-2001). In the past fertility has been relatively low in western and central part of Tamil Nadu. Periyar (Erode), Nilgiri, Coimbatore, Madurai, Salem, Tiruchirapalli and Thanjavur were at low level in terms of their fertility rate than the other parts of Tamil Nadu, while it was relatively higher in North Arcot and South Arcot (present Villupuram and Cuddaore) districts and in the Ramanathapuram (present Ramanathapuram and Virudhnagar), Tirunelvel (present Tirunelveli and Thoothukkudai), Kanniyakumari, Pudukkottai and in the south and south-east. Periyar was the only district which were having their total fertility rate below 3, rest of the districts of Tamil Nadu were experiencing high fertility even more than 4 children per woman in 1981.

TOTAL FERTILITY RATE IN UTTAR PRADESH
1981



TOTAL FERTILITY RATE IN UTTAR PRADESH
1991



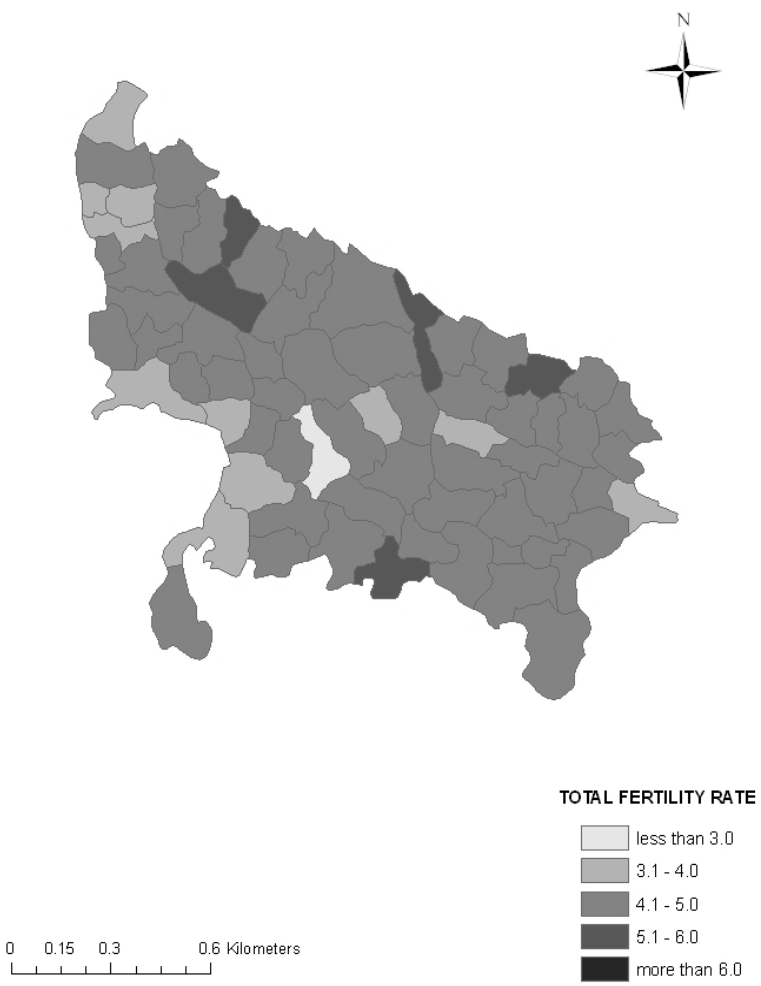


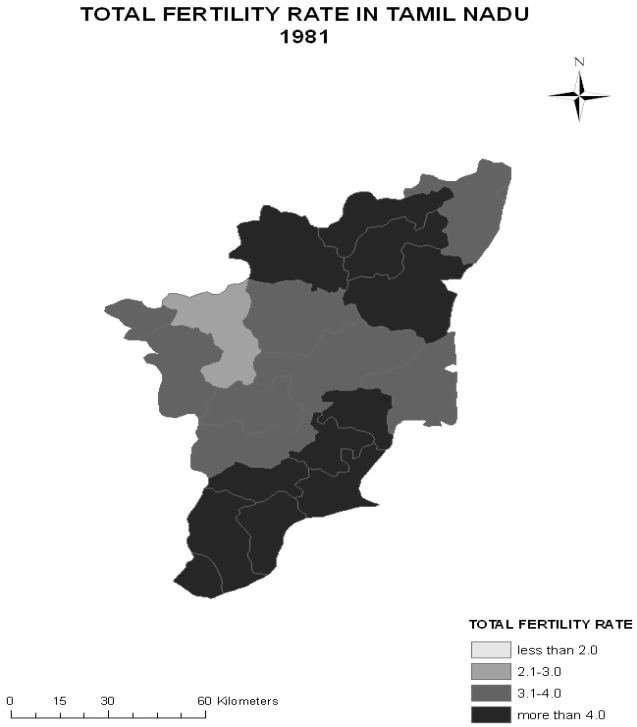
Table 7: Changes in Total Fertility Rate and Crude Birth Rate in Tamil Nadu (1981-2001)

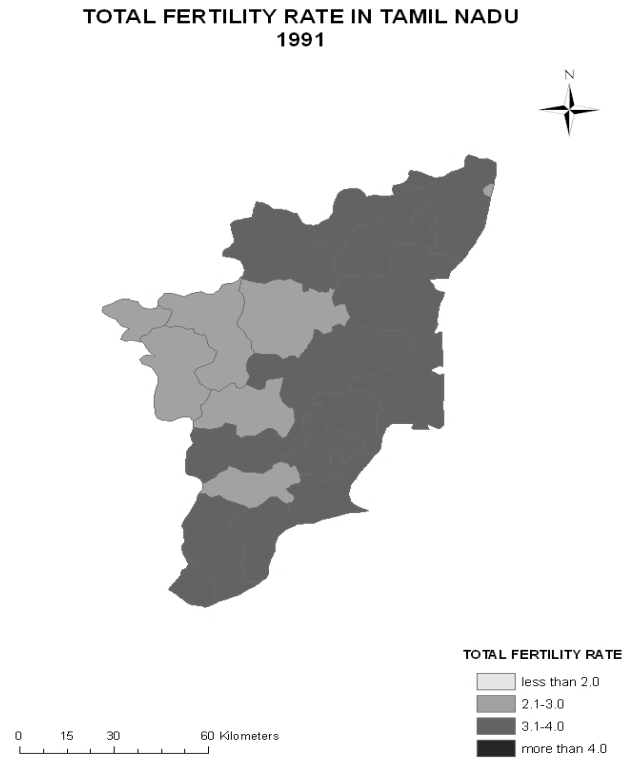
States	CBR 1981	CBR 2001	% decline	TFR 1981	TFR 2001	% decline
Madras	30.38	13.5	-55.56	3.30	1.3	-60.60
Chengalpattu	32.71	18.0	-44.97	4.00	1.9	-52.50
North Arcot	34.30	18.6	-45.77	4.50	1.9	-57.77
Dharma Puri	32.60	20.9	-35.88	4.30	2.6	-39.53
Tiruvannamalai	34.30	17.7	-48.39	4.50	2.1	-53.33
South Arcot	34.94	18.8	-46.19	4.40	2.1	-52.27
Salem	27.93	16.5	-40.92	3.40	1.7	-50.00
Periyar	24.91	14.7	-40.98	2.90	1.9	-34.48
Nilgiri	32.67	16.3	-50.10	3.60	1.6	-55.55
Coimbatore	27.78	16.4	-40.96	3.20	1.6	-50.00
Dindigul Anna	27.78	17.0	-38.80	3.20	1.7	-46.87
Tiruchchirappalli	29.42	17.5	-40.51	3.60	1.8	-50.00
Thanjavur	30.32	17.5	-42.28	3.70	1.9	-48.64
Pudukkottai	33.25	19.0	-42.85	4.30	1.8	-58.13
Muthuramlinga Thevar	35.20	16.8	-52.27	4.50	2.0	-55.55
Madurai	32.29	16.8	-47.97	4.00	1.9	-52.50
Kamarajar	35.20	18.0	-48.86	4.50	1.8	-60.00
Ramanathapuram	35.20	18.6	-47.15	4.50	1.9	-57.77
Chidambaranar	36.02	17.2	-52.24	4.70	2.1	-55.31
Tirunelveli-	36.02	17.8	-50.50	4.70	1.8	-61.70
Kanniya Kumari	33.81	15.4	-54.45	4.40	1.9	-56.81
Tamil Nadu	31.96	17.2	-46.18	3.90	1.6	-58.97

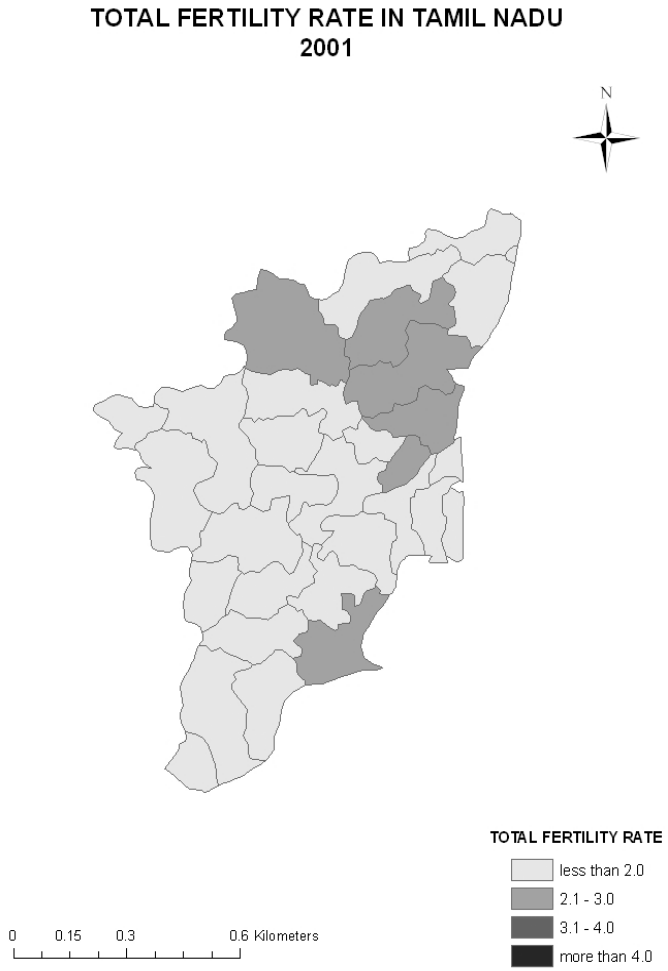
Note: the average has been taken for the districts, which were separated in 2001.

In Tamil Nadu a regional pattern in fertility can be observed. Fertility started to decline from western part of Tamil Nadu and reached its coastal areas. In 1981 Periyar was the only district having its total fertility rate below 3 while in 1991 almost all the adjoining areas came in this category (TFR below 3). In 2001 most of the districts of Tamil Nadu came under the category of TFR below 2 (replacement level). The districts, which were having high fertility in 1991, also declined their fertility sharply and reach their replacement level in 2001. Dharmapuri was the only district, which was having its TFR 2.6 in 2001 which was higher than replacement level of fertility.

Though the fertility was lower in the western and central part of Tamil Nadu in 1981, but the speed of fertility decline was lower in these districts. The districts, which were at high-level fertility rate, declined their fertility faster than the earlier ones. Districts like Kanniyakumari, Tirunelveli, Chidambaranar, Kamarajar, Madurai, Mathuramalinga, North Arcot and Chennai were having high total fertility rate declined their fertility faster than other districts of Tamil Nadu. Dharampuri is the only district, which is exception to this rule. It was having high fertility in 1981 and declined its fertility much slowly from 4.3 to 2.6 in 2001.







Discussion

This paper deals with the trends in fertility rates in the state of Uttar Pradesh and Tamil Nadu. The time series data which is collected from Sample Registration System shows that fertility rates has declined in both the states but the difference can be seen even at the beginning of time series with lower levels of total fertility rate in Tamil Nadu in comparison to Uttar Pradesh. Fertility has declined with much faster speed in Tamil Nadu and with lower speed in Uttar Pradesh in comparison to national average. Though fertility declined in both the states, but the level differed substantially. The decline in Uttar Pradesh did not reach the level achieved by Tamil Nadu in 1971 even by 2000. Thus there was more than three decades time period gap in terms of levels of fertility decline in the two states.

Fertility rate among the different age groups of women also experienced the different pace of fertility decline in both the states. In Tamil Nadu fertility declined substantially among the earlier and last age groups. Though Uttar Pradesh also experienced the same trend but higher age groups could not declined their fertility as much as the higher age groups of Tamil Nadu.

When we compare the district level fertility decline in Uttar Pradesh and Tamil Nadu, we find clearly two contrasting pictures. In the year of 1981, all the districts of Tamil Nadu were having their total fertility rate below 5 children per woman, while in Uttar Pradesh all the districts were at TFR more than 5 children per woman. TFR 5 was the dividing range between Tamil Nadu and Uttar Pradesh in the year 1981. Thus a big difference in terms of total fertility rate can be examined in these two states in 1981.

In the year of 1991 all the districts of Tamil Nadu came in TFR below 3 ranges, while in Uttar Pradesh the lowest range was 3.94 children per woman. In 2001 most of the districts of Tamil Nadu could reach their replacement level of fertility (2 children per woman) even below replacement level, but Uttar Pradesh was not having any district, which could achieve the replacement level. Thus one finding come from this analysis that though Tamil Nadu was far ahead than Uttar Pradesh in having low fertility in 1981, but we also find that the rate of fertility decline was also much higher in all the districts of Tamil Nadu than the districts of Uttar Pradesh. All the districts of Tamil Nadu which were having their TFR more than 4 children per woman achieved their replacement level in these 30 years, but no districts of Uttar Pradesh which were at more than 4 children per woman could reach their replacement level of fertility till 2001. Thus a good finding come from the fact that speed of fertility decline has been much lower in all the district of Uttar Pradesh in comparison to all the districts of Tamil Nadu. Though in the initial stage fertility rates were higher in Uttar Pradesh, but at the same time the speed of fertility decline has also been much lower in all the districts.

The Indian family planning program formally began in the early 1950s with the adoption of the government's first Five Year Plan. Since then many attempts are being made to control fertility rates in India. Nevertheless even after sustained efforts for more than half a century, we could not achieve worthwhile progress in population stabilization. Therefore it can be said that our strategy to control the population growth through family planning programmes could not achieved expected results. Various population policies and

programmes for population control should include socio-economic factors as important ingredients. Further, these programmes should be region specific. The regions which are having high fertility levels should be given more consideration, and focused programme should be launched in those areas. The formulation of these programmes should be based on extensive fieldwork. The empirical studies of specific regions reveal the grass root level relationship between fertility and its determinants. After receiving these information strategies for controlling fertility should be adopted. In the process of formulation of such strategies weightage should be rationalized for the different attributes for population control, in specific regions. At the same time these programmes should be evaluated from time to time, as the social and economic setup of the particular region also changes accordingly.

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