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**FERTILITY TRANSITION IN
KARNATAKA: LEVELS,
TRENDS AND IMPLICATIONS**

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The Institute for Social and Economic Change,
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FERTILITY TRANSITION IN KARNATAKA : LEVELS, TRENDS AND IMPLICATIONS*

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Abstract

Using data from official statistics, census and surveys, this paper traces fertility transition of Karnataka and explains factors responsible for slow pace in comparison to other South Indian States. There exist considerable regional disparities with regard to health and demographic indicators. Fertility decline has been faster in southern and coastal regions, and at a tardy pace in backward northern districts characterised by low literacy, low female age at marriage, poor health infrastructure and low status of women.

Introduction

Almost all the developing societies are currently experiencing demographic transition, at varying pace and levels. It is generally accepted that the pace of demographic transition is closely associated with the levels of socio-economic development. In a vast country like India with considerable demographic diversity and heterogeneity and varying levels of socio-economic development among states, the levels and phases of fertility decline vary significantly from one state to another. There exist considerable variations in the status of women, nuptiality patterns and fertility behaviour, particularly between southern and northern states of the country. The demographic transition in South India (population of about 220 million) has now reached its last phase with fertility

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levels registering significant decline during the last two decades, much ahead of other parts of the country.

The two southern states of Kerala and Tamil Nadu (together about 85 million population as per the 2001 census) had already attained a below replacement level of fertility in the 1990s. Researchers have identified various factors - social, economic and political - for the significant reduction in fertility both in Kerala and Tamil Nadu (Zachariah, 1984; Bhat and Irudaya Rajan, 1990; Antony, 1992; Guilimoto, 1992; Srinivasan, 1995; Kulkarni et al., 1996; Nagaraj, 1998). The fertility decline in Kerala in the seventies, despite the low level of economic development, received international acclaim. Social scientists have put forth many explanations for the spectacular decline in Kerala's fertility. Factors like high female literacy, agrarian reforms, matrilineal customs, better health and educational facilities, government sponsored welfare measures and political consciousness are believed to be responsible for the rapid and unusual demographic transition in Kerala. The state is also known for its notable achievements in the social sector, particularly in literacy and primary health care. At the same time, Kerala has a relatively poor record in industrial production and agricultural growth. This is regarded as an anomaly since the widely held notion is that declines in fertility and mortality rates are primarily a consequence of higher economic growth. In the case of Tamil Nadu, various explanations have been advanced to understand the demographic transition - strong political will, Dravidian movements, social reforms, influence of mass media, particularly films and above all, an efficient official family planning programme. An optimal approach in the strategic balancing of 'top-down' and 'bottom-up' forces is believed to have played a crucial role in the successful fertility transition in Tamil Nadu, overcoming the cultural barriers imposed by low literacy levels and low standard of living. Demographers tend to differ on the crucial factors responsible for this dramatic decline. After reviewing all the available literature, Kulkarni et al. (1996) concluded that "we have a fairly good idea of the 'when' and 'how' of the fertility transition in Tamil Nadu, but are yet to have a convincing answer to the 'why' question?" (p.63).

Andhra Pradesh, the first state to formulate a state population policy, also witnessed a fairly rapid decline in fertility during the nineties despite slow progress in socio-economic development. The total fertility rate has declined significantly

from 4.0 in 1981 to 2.5 in 1996, a 38 per cent decline in 15 years; Andhra Pradesh occupies third position after Kerala and Tamil Nadu with regard to fertility transition. Even with a low level of female literacy, the decline was very significant and there are few studies which tried to explain the factors for the fertility decline (Raju, 1998; Balasubramanian, 1999; James, 1999).

But the pace and levels of fertility transition in Karnataka are relatively unexplored and have received very little attention compared to other South Indian states. There are studies on various aspects of demographic changes in the state (Caldwell et al., 1983 and 1986; Chandrasekaran et al., 1985; Srinivasan, 1986; Raju et al., 1995; Rayappa and Lingaraju, 1996; Sekher et al., 2000). This paper attempts to take stock of the demographic transition in Karnataka over the years. The rare opportunity to examine fertility changes during the last five decades is provided by three important large-scale demographic surveys carried out in the state, followed by NFHS -1 and 2, apart from census and official statistics. The Mysore Population Study (MPS) conducted in 1951-52, a joint venture of United Nations and Government of India, provided valuable information on births, deaths, age at marriage and the motivational aspects of fertility regulation. The MPS collected data from about 10,000 households in rural and urban areas of the old Mysore state and was an experiment in the use of sample surveys of households to measure the trends and characteristics of population and also to examine the interrelationship between fertility behaviour and socio-economic development (United Nations, 1961). The second major survey, the Bangalore Population Study (BPS) was undertaken in 1975 by the Population Centre, Bangalore which analysed the factors affecting fertility. It also assessed the impact of the family planning programme and the demand for contraception. About 5000 households were covered in BPS (Srinivasan et al., 1978). The MPS and BPS covered roughly the same geographical area and hence, fertility patterns reported in the two surveys can be compared to understand the changes over a generation. The third major survey, the Karnataka Fertility Survey (KFS), carried out by the Institute for Social and Economic Change, Bangalore, with financial and technical support from the World Bank, covered about 3000 rural households in 1979-80, examining the trends and factors that determine the age at marriage and fertility (Rao, et al., 1986). The National Family Health Survey (NFHS) - 1 in 1992-93, interviewed about 4400 ever married

women aged 13-49 years in rural and urban areas of the state (PRC, ISEC and IIPS, 1995). The NFHS - 2 in 1998-99 collected information from 4374 ever-married women aged 15-49 (PRC, ISEC and IIPS, 2000). The primary objective of NFHS was to provide state level data on fertility, nuptiality, family size preference, family planning, the level of unwanted fertility, etc. A comparative analysis of data and findings from these major surveys will provide us sufficient information to understand the changes in fertility patterns during the last five decades in the state.

This paper is presented in five sections. The first section briefly describes the socio-economic and demographic background of Karnataka. The second section deals with population growth and dynamics. The situation with regard to age at marriage and family planning acceptance is discussed in the third section. The fourth section examines the fertility levels and differentials. The final section highlights the pattern of demographic transition and its implications.

The Setting

The state of Karnataka was formed in 1956 by merging the districts of Belgaum, Bijapur, Dharwad and Uttara Kannada of Bombay Presidency; Bidar, Gulbarga and Raichur of Hyderabad state; and Bellary and Dakshinna Kannada of Madras Presidency with the princely state of Mysore. The regional disparities in terms of socio-economic development that existed between different regions then still continue to a great extent now. The state has four natural regions extending over 700 kms. from the north to the south and 400 kms. from the east to the west. The four natural regions are Southern Maidan, Northern Maidan, Coastal area and Malnad.

According to the latest census (2001), the population of Karnataka is 53 million. The population in the state has quadrupled during the last century. The state accounts for five per cent of the population and six per cent of the land area of the country. The percentage of literate population is 67 (76 for males and 57 for females). Presently, there are 27 districts in the state of which seven were created in 1997. Since data is not available for the new districts, the analysis in this paper is based on an earlier configuration of 20 districts. From the recently released 2001 census results, available basic demographic data for 27 districts are presented in Table 1 (see Map 1).

Table 1. Basic Demographic Data for Districts of Karnataka - 2001

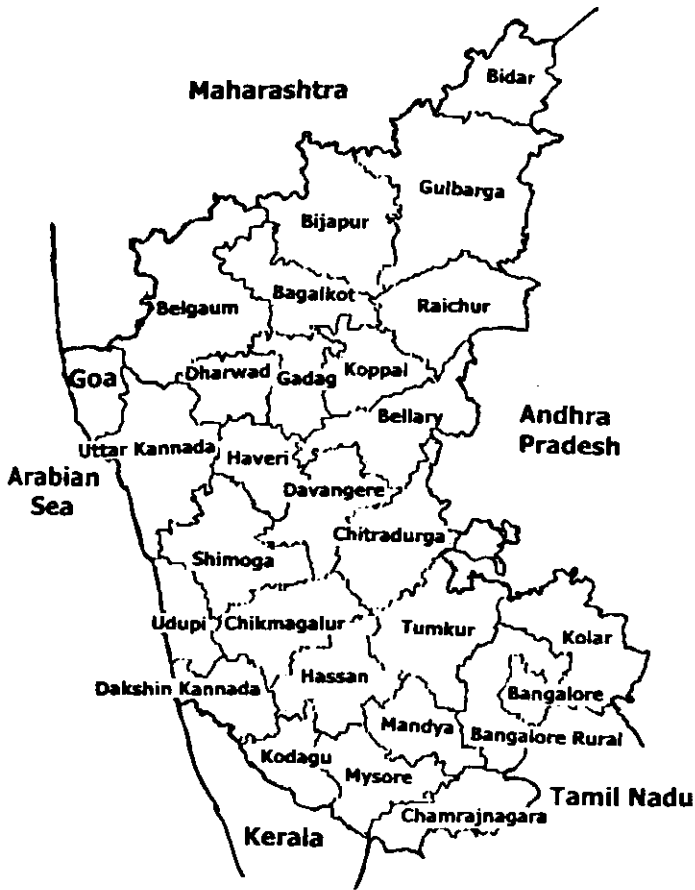
State/District	Population			Decadal Growth Rate (1991- 2001)	Sex Ratio	Density	Literacy Rate (7 + age)		
	Total	Males	Females				Persons	Males	Females
Karnataka	52733958	26856343	25877615	17.25	964	275	67.04	76.29	57.45
Belgaum	4207264	2147746	2059518	17.40	959	314	64.42	75.89	52.53
Bagalkot	1652232	835684	816548	18.84	977	251	57.81	71.31	44.10
Bijapur	1808863	928550	880313	17.63	948	172	57.46	68.10	46.19
Gulbarga	3124858	1591379	1533479	21.02	964	193	50.65	62.52	38.40
Bidar	1501374	770679	730695	19.56	948	276	61.98	73.29	50.01
Raichur	1648212	832352	815860	21.93	980	241	49.54	62.02	36.84
Koppal	1193496	602026	591470	24.57	982	166	55.02	69.15	40.76
Gadag	971955	493795	478160	13.14	968	209	66.27	79.55	52.58
Dharwad	1603794	823415	780379	16.65	948	376	71.87	81.04	62.20
Uttara Kannada	1353299	687026	666273	10.90	970	132	76.59	84.48	68.48
Haveri	1437860	740307	697553	13.29	942	298	68.09	77.94	57.60
Bellary	2025242	1028481	996761	22.30	969	240	58.04	69.59	46.16
Chitradurga	1510277	772649	737578	15.05	955	179	64.88	74.69	54.62

(Contd.....)

State/District	Population			Decadal Growth Rate (1991-2001)	Sex Ratio	Density	Literacy Rate (7 + age)		
	Total	Males	Females				Persons	Males	Females
Davangere	1789693	917320	872373	14.78	951	302	67.67	76.44	58.45
Shi oga	1639595	829365	810230	12.90	977	193	74.86	82.32	67.24
Udupi	1109494	521541	587953	6.88	1127	286	79.87	86.59	74.02
Chikagalur	1139104	574275	564829	11.98	984	158	72.63	80.68	64.47
Tu kur	2579516	1311941	1267575	11.87	966	243	67.19	76.88	57.18
Kolar	2523406	1281153	1242253	13.83	970	307	63.14	73.14	52.81
Bangalore	6523101	3422797	3100313	34.80	906	2979	83.91	88.36	78.98
Bangalore Rural	1877416	961335	916081	12.21	953	323	65.00	74.43	55.12
Mandya	1761718	887307	874411	7.14	985	355	61.21	70.71	51.62
Hassan	1721319	858623	862696	9.66	1005	253	68.75	78.29	59.32
Dakshina Kannada	1896403	937651	958752	14.51	1023	416	83.47	89.74	77.39
Kodagu	545322	273210	272112	11.64	996	133	78.17	83.80	72.53
Mysore	2624911	1335841	1289070	15.04	965	383	63.69	71.30	55.81
Ch a rajnagara	964275	489895	474380	9.16	968	189	51.26	59.25	43.02

Source: Census of India, Karnataka, 2001.

District Map of Karnataka



As per the 1991 census, there were 29,193 villages in the state, out of which 2127 were uninhabited villages. The average village population is 1149 and average area of a village is 6.64 sq. km.. Seventy two per cent of households in Karnataka have access to safe drinking water, whereas only 24 per cent of households have toilet facility (6.9 in rural and 62.5 in urban areas). Safe drinking water is defined in the census to cover only tap and bore well and there is likely to be some underestimation in respect of Malnad and Coastal areas which depend on open wells. Fifty-three percentage of households were electrified in the state. But in rural Karnataka, only 42 per cent of households were electrified and 67 per cent of households have access to safe drinking water. It is important to note that 20 per cent of households in rural Karnataka have none of the three basic amenities (electricity, safe drinking water and toilet).

Eighty six per cent of the villages have primary schools, 39 per cent have middle schools and 10 per cent have secondary schools. But only 12.5 per cent of villages have some health facility and only 6 per cent of villages have primary health centres. With regard to housing facilities, nearly 80 per cent of the households in rural Karnataka lived in pucca and semi-pucca houses as on 1991.

From 1960-61 to 1996-97, state income (Net State Domestic Product) at 1980-81 prices increased from Rs 2977 crore to Rs 13047 crore, more than four-fold increase. But the real per capita income has only doubled from Rs 1273 to Rs 2668 during the same period (Govt. of Karnataka, 1999). There have been wide variations in the economic performance of the state in overall terms, across districts, regions and sectors during the last two decades.

From 1981 to 1991, the workforce in the state indicated a growth of 2.6 per cent per annum, increasing from 15 million to 19 million. Between the ages 15 and 59 years, the labourforce participation rate for the state works out to be 67 per cent (85 per cent for males and 47 per cent for females). Between 1973-74 and 1993-94, the proportion of population below the poverty line has declined from 54 per cent to 33 per cent in Karnataka, against a decline of 55 per cent to 36 per cent at the national level. Despite the reduction in overall poverty levels, 15.6 million persons (2.8 million households) were below the poverty line in

1993-94, majority of them (9.6 million) in rural areas. The proportion of rural and urban populations in the state below the poverty line (61 and 39, respectively) is lower than those at the national levels (69 and 31 per cent, respectively).

Trends and Levels in Population Growth

The population growth in the state has not been uniform in the last century, with variations from decade to decade. There was a slight fall in the population during 1911 to 1921, mainly due to famines and epidemics after the first world war (Table 2). Historically, the population growth in Karnataka has been close to the national average. However, there was a sharp decline in the growth rate during the last two decades.

The growth rates vary widely across the districts. It was observed that until 1940, some districts like Kodagu and Chikmagalur experienced decrease in their population due to the scourge of malaria. The fastest growing region in the state has been Southern Maidan comprising districts belonging to Old Mysore state, followed by Northern Maidan, Coastal and Malnad areas (Table 3). But the northern districts (coming under Gulbarga division) have experienced higher growth during 1981-91. Good irrigation facilities encouraged large scale migration into Bellary and Raichur districts in the eighties, mainly from neighbouring Andhra Pradesh. Out of 20 districts in the state, only four belonging to Gulbarga division, have experienced higher growth rate during the last decade than during the previous decades. Of the remaining districts, except Bangalore (the capital city of Karnataka), all other districts have growth rates close to or less than 2 per cent, with Kodagu showing the lowest growth rate (0.5 per cent) during the last decade.

The density of population has increased from 68 persons in 1901 to 101 by 1951 and to 235 by 1991. The highest population density is observed in Bangalore division, followed by Mysore division. In the Bangalore division, as expected, Bangalore urban is the most densely populated district in the state in 1991 followed by Mandya and Dakshina Kannada. The less densely populated districts are Kodagu and Uttara Kannada. Population density is considerably lower in Karnataka compared to the national average (273 per sq. k.m.).

Table 2. Decadal Population Growth in Karnataka, 1901-2001

Year	Population			Decennial Growth Rate	
	Persons	Males	Females	Karnataka	India
1901	13054754	6582195	6472559	—	—
1911	13525251	6827801	6697450	+ 3.60	+ 5.75
1921	13377599	6793718	6583881	- 1.09	- 0.31
1931	14632992	7445458	7187534	+ 9.38	+ 11.00
1941	16255368	8294043	7961325	+ 11.09	+ 14.22
1951	19401956	9866923	9535033	+ 19.39	+ 13.31
1961	23586772	12040923	11545849	+ 21.57	+ 21.51
1971	29299014	14971900	14327114	+ 24.22	+ 24.80
1981	37043451	18869494	18173957	+ 26.43	+ 24.79
1991	44977201	22951917	22025284	+ 21.12	+ 23.85
2001	52733958	26856343	25877615	+ 17.25	+ 21.34

Source: India, Registrar General (various years).

Table 3. Decadal Variation in Population Growth by Region in Karnataka, 1901-2001

State/ Regions	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81	1981-91	1991-2001
Karnataka	+3.60 (+3.55)	-1.09 (-1.10)	+9.38 (+9.01)	+11.09 (+10.57)	+19.36 (+17.85)	+21.57 (+19.72)	+24.22 (+21.92)	+26.43 (+23.73)	+21.12 (+19.16)	17.25 (15.91)
Coastal and Malnad	-0.51	-1.11	+5.71	+7.81	+17.24	+32.67	+24.19	+24.33	+13.13	11.47
Northern Maidan	+3.15	- 4.98	+9.96	+11.05	+15.60	+19.27	+22.53	+23.60	+23.00	18.76
Southern Maidan	+6.44	+3.35	+10.42	+12.81	+24.25	+19.55	+25.90	+30.15	+22.62	14.35
All India	+5.75 (+5.60)	-0.31 (-0.31)	+11.00 (+10.49)	+14.22 (+13.39)	+13.31 (+12.58)	+21.51 (+19.78)	+24.80 (+22.40)	+24.66 (+22.36)	+23.51 (+21.12)	21.34 (20.27)

Note : Coastal and Malnad region consists of six districts, namely, Dakshina Kannada, Udupi and Uttara Kannada, (Coastal); Chikmagalur, Kodagu and Shimoga (Malnad).

Southern Maidan contains Bangalore Urban, Bangalore Rural, Chamaraajnagara, Chitradurga, Davangere, Hassan, Mandya, Mysore, Kolar and Tumkur districts.

Northern Maidan includes the districts of Bagalkot, Belgaum, Bellary, Bidar, Bijapur, Dharwad, Gadag, Gulbarga, Haveri, Koppal and Raichur.

Figures in the parentheses are decadal exponential growth rates.

Source: Census of India, (various years).

Sex Ratio

Karnataka's sex ratio (females per 1000 males) of 964 in 2001 is higher than the all India figure of 933. The sex ratio of the state during the last century was adverse to women and continued to be so. In 1891, there were 991 females per 1000 males and a century later, the sex ratio had declined to 960. Most of the districts in the state have sex ratios unfavourable to females and these are not necessarily only in the northern divisions of Gulbarga and Belgaum. In 1991, Dakshina Kannada, adjoining Kerala, is the only district with a sex ratio favourable to females. Hassan district has almost equal number of males and females. The most unfavourable sex ratios are observed in Bangalore Urban, Bangalore Rural, Chitradurga and Dharwad districts.

Population Composition

The young population below the age of 14 years and the old (60 years and above) form the dependent groups. The young population is 36 per cent and old population is 7 per cent in 1991. Age distribution of all age groups of 1981 and 1991 is presented in Table 4. The average household size for the state is 5.7 persons which is slightly higher than the national average of 5.5. The northern districts of Bidar and Bijapur have a high percentage of large households (6 and more persons), whereas Kodagu shows a different picture. The household size in rural Karnataka is 5.8 persons and 5.4 in urban Karnataka. According to the NFHS (1992-93), Karnataka had 12.5 per cent female-headed households.

Hindus constitute 82 per cent of the state's population, Muslims 11.6 per cent and Christians 2.4 per cent as per the 1991 census. Scheduled Castes (16 per cent) and Scheduled Tribes (4 per cent) comprise one-fifth of the total population in the state. More number of groups have been added to the list of Scheduled Tribes after the removal of area restrictions in 1976. In fact, the proportion of ST population in the state was less than 1 per cent prior to 1981. While Kolar and Gulbarga have a larger share of Scheduled Castes, Chitradurga has a bigger share of Scheduled Tribes. Though Hindus constitute more than four-fifth of the total population in the state, they are not homogenous and are divided into many caste groups. Lingayats (15.3 per cent) and Vokkaligas (10.8 per cent) are the major castes in Karnataka.

Table 4. Percentage Distribution of Population by Age and Residence in Karnataka, 1981 and 1991

Age Group	Total						Rural				Urban					
	1981		1991		1981		1991		1981		1991		1981		1991	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0-4	12.32	12.55	11.36	11.39	12.68	12.74	11.92	11.78	11.45	12.06	10.13	10.49				
5-9	13.74	14.22	12.50	12.83	14.18	14.51	12.95	13.17	12.68	13.48	11.52	12.01				
10-14	12.97	13.27	11.90	12.05	13.25	13.47	12.14	12.11	12.30	12.77	11.40	11.93				
15-19	10.11	9.76	10.04	9.54	9.75	9.34	9.74	9.12	11.10	10.85	10.72	10.52				
20-24	8.82	8.84	9.04	9.12	8.12	8.31	8.44	8.62	10.63	10.18	10.37	10.29				
25-29	7.61	8.06	7.93	8.99	7.17	7.73	7.57	8.62	8.76	8.91	8.73	9.84				
30-34	6.17	6.25	6.71	6.94	5.83	6.21	6.35	6.77	7.05	6.37	7.48	7.33				
35-39	5.75	5.71	6.65	6.44	5.64	5.70	6.38	6.31	6.06	5.73	7.25	6.74				
40-44	5.19	4.76	5.50	4.89	5.21	4.92	5.39	5.00	5.21	4.34	5.74	4.64				
45-49	4.49	3.93	4.58	4.09	4.58	3.99	4.59	4.18	4.31	3.77	4.53	3.89				
50-54	3.90	3.69	3.93	3.77	4.08	3.84	4.10	3.96	3.51	3.30	3.58	3.33				
55-59	2.36	2.07	2.46	2.25	2.46	2.11	2.53	2.29	2.16	1.99	2.31	2.15				

(Contd....)

Age Group	Total						Rural						Urban					
	1981		1991		1981		1991		1981		1991		1981		1991			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
60-64	2.70	2.79	2.80	2.86	2.89	2.92	3.03	3.05	2.25	2.45	2.25	2.45	2.28	2.44				
65-69	1.38	1.42	1.42	1.50	1.47	1.46	1.51	1.58	1.16	1.32	1.16	1.32	1.24	1.33				
70-74	1.20	1.32	1.28	1.38	1.29	1.38	1.41	1.50	0.97	1.16	0.97	1.16	1.01	1.10				
75-79	0.51	0.52	0.53	0.56	0.56	0.53	0.57	0.58	0.42	0.48	0.42	0.48	0.44	0.49				
80-84	0.44	0.48	0.49	0.55	0.49	0.50	0.54	0.59	0.34	0.44	0.34	0.44	0.38	0.45				
85+	0.23	0.27	0.28	0.33	0.24	0.27	0.30	0.34	0.18	0.26	0.18	0.26	0.23	0.31				
ANS	-	-	0.57	0.50	-	-	0.54	0.43	-	-	-	-	0.68	0.64				
Broad Category																		
0-14	39.03	40.04	35.77	36.28	40.12	40.73	37.01	37.06	36.43	38.31	36.43	38.31	33.05	34.47				
15-59	54.40	53.08	56.85	56.04	52.85	52.14	55.08	54.85	58.12	55.45	58.12	55.45	60.70	58.77				
60+	6.57	6.88	6.80	7.18	7.03	7.13	7.36	7.65	5.45	6.24	5.45	6.24	5.57	6.12				

Note: ANS - Age not stated.

Source : Registrar General of India, 1986 and 1998.

Mortality

Between 1951-1991, the mortality in the state has declined sharply mainly due to the eradication of epidemics. According to SRS, the crude death rate of Karnataka is 7.6 (8.5 in rural and 5.4 in urban areas) in 1997 (Table 5). SRS also estimates that the infant mortality rate (IMR), widely recognised as a sensitive indicator of both the socio-economic development and the access to health services, is 53 per thousand live-births in the state compared to 71 at the national level (Table 6). But, considerable variations can be observed between rural and urban areas (63 and 24, respectively). IMR has declined considerably from 95 in 1971 to 53 in 1997. But, the rural-urban differential is more pronounced in the state than at the national level. In 1997, IMR in rural Karnataka is 63 and in urban Karnataka, it is 24. Variations across districts in the state are also significant. In 1991, infant and child mortality rates are the highest in backward Bellary district (79 and 119 respectively) compared to the lowest figures of 29 and 46, respectively, in the coastal district of Dakshina Kannada.

In 1951, the expectation of life at birth, for both the men and women, was 42 years. It increased to 62.07 years in 1991 (60.6 for men and 63.61 for women). This indicates that life expectancy of women is higher than men and the male-female gap is widening. Across districts, Dakshina Kannada has the highest (68.82 years) and Bellary (60.32 years) has the lowest life expectancy, based on the estimates on census data (Govt. of Karnataka, 1999).

Urbanisation and Migration

The proportion of urban population in Karnataka was always higher than it has been in the country as a whole. In 1901, 12.6 per cent of the state's population was considered as urban. By 1991, every third person in the state was living in an urban area. The city of Bangalore exercises tremendous influence on the urban growth of the state by attracting a large number of migrants, particularly from the neighbouring states. Bangalore has grown to become the sixth largest urban centre in India and accounts for 27 per cent of the urban population in Karnataka. The least urbanised district is Kodagu with 85 per cent of its population residing in rural areas.

**Table 5. Levels and Trends in Crude Death Rate
in Karnataka and India, 1971-99**

Year	KARNATAKA			INDIA		
	Total	Rural	Urban	Total	Rural	Urban
1971	12.1	14.0	7.2	14.9	16.4	9.7
1972	12.8	14.3	8.7	16.9	18.9	10.3
1973	12.4	14.3	7.7	15.5	17.0	9.6
1974	10.8	12.4	7.0	14.5	15.9	9.2
1975	11.1	12.5	7.5	15.9	17.3	10.2
1976	11.7	13.4	7.7	15.0	16.3	9.5
1977	11.1	12.5	7.8	14.7	16.0	9.4
1978	12.0	13.6	8.2	14.2	15.3	9.4
1979	10.4	11.8	6.4	13.0	14.1	8.1
1980	9.6	10.7	6.6	12.5	13.7	7.8
1981	9.1	10.2	6.3	12.5	13.7	7.8
1982	9.2	10.2	6.3	11.9	13.1	7.4
1983	9.3	10.6	6.0	11.9	13.1	7.9
1984	9.6	10.7	6.6	12.6	13.8	8.6
1985	8.8	9.8	6.1	11.8	13.0	7.8
1986	8.7	9.4	6.8	11.1	12.2	7.6
1987	8.7	9.7	6.1	10.9	12.0	7.4
1988	8.8	9.5	7.0	11.0	12.0	7.7
1989	8.8	9.6	6.5	10.3	11.1	7.2
1990	8.1	8.8	6.1	9.7	10.5	6.8
1991	9.0	9.8	6.9	9.8*	10.6	7.1
1992	8.5	9.4	6.0	10.1*	10.9	7.0
1993	8.0	9.5	5.2	9.3*	10.6	5.8
1994	8.3	9.3	6.0	9.3*	10.1	6.7
1995	7.6	8.5	5.6	9.0*	9.8	6.6
1996	7.6	8.6	5.4	9.0*	9.7	6.5
1997	7.6	8.5	5.4	8.9*	9.6	6.5
1998	7.9	8.9	5.6	9.0*	9.7	6.6
1999	7.7	8.7	5.5	8.7*	9.4	6.3

* Excludes Jammu and Kashmir due to non-receipt of returns
Source : Registrar General, India (various years).

Table 6. Levels and Trends in Infant Mortality Rate in Karnataka and India, 1971-99

Year	KARNATAKA			INDIA		
	Total	Rural	Urban	Total	Rural	Urban
1971	95	105	54	129	138	82
1972	95	102	68	139	150	85
1973	90	96	68	134	143	89
1974	86	98	52	126	136	74
1975	80	86	60	140	151	84
1976	89	99	60	129	139	80
1977	83	89	64	130	140	81
1978	82	90	58	127	137	74
1979	83	94	51	120	130	72
1980	71	79	45	114	124	65
1981	69	77	45	110	119	62
1982	65	71	47	105	114	65
1983	71	80	41	105	114	66
1984	74	84	43	104	113	66
1985	69	80	41	97	107	59
1986	73	82	47	96	105	62
1987	75	86	41	95	104	61
1988	74	83	46	94	102	62
1989	80	89	53	91	98	58
1990	70	80	39	80	86	50
1991	77	87	47	80*	87	53
1992	73	82	41	79*	85	53
1993	67	79	42	74*	82	45
1994	67	73	50	74*	80	52
1995	62	69	43	74*	80	48
1996	53	63	25	72*	77	46
1997	53	63	24	71*	77	45
1998	58	70	25	72*	77	45
1999	58	69	24	70*	75	44

* Excludes Jammu and Kashmir due to non-receipt of returns

Source : Registrar General, India (various years).

Migration data from successive censuses indicate that about 87 per cent of total migrants recorded are inter-district or intra-district migrants within the state. Among the migrants, only 12.5 per cent are from other states of India as per the 1991 census. Among the districts, as expected, Bangalore urban district has the highest share of inter-state migrants. Border districts like Bellary, Kodagu, Bidar and Kolar also have high proportion migrants from other states.

Nuptiality

Age at marriage can be gauged by looking at data on two indicators; namely, proportion never married in the total population by age as well as by calculating singulate mean age at marriage. Marriage is almost universal in the state, as elsewhere in the country. There are many factors that determine the age at marriage in a traditional society, particularly in rural areas. "Under the conditions which prevail in the rural areas of Old Mysore state, it is not economic status but what has been prescribed by custom that has an overriding influence on marriage practices" (United Nations, 1961).

As per the 1991 census data, the average age at marriage for females in the state was 20.15 years, whereas for males it was 26.22 years (Table 7). Historically, age at marriage has been lower in the districts of Northern Karnataka and higher in the Coastal and Malnad areas of the state. The singulate mean age at marriage was 26 years for males and 19 years for females in 1991. The differences between rural and urban areas are on expected lines (25 years in rural and 27 years in urban areas for males and 18 years and 20 years for females. According to NFHS (1992-93), urban women marry about two years later than the rural women. Men marry 6.5 years later than women in Karnataka. Although marriage before age 15 has been quite common in Karnataka, it has been virtually absent at least in urban areas. NFHS also shows that the median age at marriage is essentially the same as the median age at first cohabitation, indicating that formal marriage is immediately followed by cohabitation with the husband. It is interesting to note that marriage between relatives (consanguineous marriage) is quite common in the state, particularly among the lower castes (Gulati and Hilde, 1997). As per NFHS data, more than one-fourth of ever-married women married their first cousin and about nine per cent married their second cousin, uncle or other blood relative.

Table 7. Mean Age at Marriage by Sex in Districts of Karnataka, 1961-1991

District	1961		1971		1981		1991	
	Female	Male	Female	Male	Female	Male	Female	Male
Bangalore Urban	17.39	26.00	19.03	26.60	20.02	27.09	20.89	27.30
Bangalore Rural	-	-	-	-	-	-	19.69	26.70
Belgaum	15.59	22.99	16.86	23.46	17.89	24.65	18.77	24.80
Bellary	16.12	24.14	17.11	24.14	17.90	24.66	19.08	24.81
Bidar	14.78	21.37	15.96	22.66	17.31	23.91	18.80	24.64
Bijapur	14.88	22.16	15.85	22.44	16.72	23.54	18.26	24.08
Chikmagalur	17.36	26.14	19.35	26.30	20.82	26.72	21.50	27.02
Chitradurga	16.52	25.32	17.69	26.07	19.09	26.09	20.17	26.58
Dakshina Kannada	19.33	27.18	20.72	27.80	22.40	28.18	23.39	28.96
Dharwad	16.00	24.31	17.73	24.80	19.09	26.01	20.02	26.40
Gulbarga	14.92	21.81	15.86	22.71	17.02	23.98	18.64	24.39

(Contd....)

District	1961		1971		1981		1991	
	Female	Male	Female	Male	Female	Male	Female	Male
Hassan	17.47	25.36	18.94	25.40	20.18	25.87	21.01	26.33
Kodagu	18.96	27.18	21.10	27.59	21.71	27.14	21.95	27.00
Kolar	16.64	24.71	18.02	25.37	19.00	25.71	18.89	26.15
Mandya	16.03	25.12	17.15	25.70	18.31	26.05	19.56	26.69
Mysore	16.71	25.27	17.84	25.98	19.05	26.34	19.89	26.50
Raichur	15.04	22.25	15.90	22.70	17.00	23.59	18.24	23.79
Shimoga	16.53	26.14	19.35	25.64	20.50	26.78	21.31	27.28
Tumkur	16.59	25.35	17.97	26.29	19.14	26.48	20.05	26.72
Uttara Kannada	17.46	25.21	18.84	25.57	21.14	27.06	22.35	27.81
Karnataka	16.32	24.40	17.79	25.24	19.20	25.88	20.15	26.22
India	15.94	21.39	17.16	22.06	18.40	23.50	19.26	23.95

Source: Registrar General, India, 1988; Goyal, R.P., 1988; Prakasam C.P. et al., 1998.

Significant changes have been observed from 1961 to 1991 in the proportion of single women in the age groups of 15-19 and 20-24 years. In 1961, 31 per cent were single in the age group of 15-19 years, whereas in 1991 it was about 73 per cent. Same way, in the age group of 20-24, only 6 per cent were single in 1961 and it increased to about 24 per cent in that age group in 1991. However, variation across districts is quite remarkable. In Dakshina Kannada, 94 per cent of females in the age group 15-19 years were unmarried in 1991, whereas it is only about 52 per cent in Raichur and Bijapur districts. Age at marriage of females is the highest in Dakshina Kannada (23.4 years) followed by Kodagu (22 years). On the other hand, in five districts of Karnataka, it is between 18 and 19 years (Table 7). In rural areas of Raichur and Bijapur (Northern Karnataka), the age at marriage for women is less than 18 years (the minimum legal age for marriage) in 1991.

Family Planning

Karnataka had an early start in family planning. Two government sponsored family planning clinics were opened, one in Bangalore and the other in Mysore as early as in 1930. These were the first official family planning clinics in the world (Rayappa and Sekher, 1998). According to NFHS, the knowledge of family planning is nearly universal in Karnataka, with 99 per cent of ever-married women reporting knowledge of at least one modern method of birth control. Even though knowledge of family planning is nearly universal, the practice of contraception is relatively lower in the state. Half of the currently married women, aged 15-49 years, were not using a contraceptive method (NFHS, 1992-93). 48 per cent were using a modern method (43 per cent sterilization, mostly female sterilization and only 5 per cent spacing methods). The average ideal family size preferred by women is 2.5 children. According to the Mysore Population Study conducted in 1952, it was 4.7. To understand the changes in fertility behaviour and attitudes, a comparison of selected demographic indicators from major surveys are presented in Table 8. NFHS - 1 indicates that 18 per cent of currently married women have an unmet need for family planning, (12 per cent for spacing births and 6 per cent for limiting). If all the women with an unmet need for family planning were to adopt it, the current contraceptive use rate would increase

Table 8. Comparison of Selected Demographic Indicators - Karnataka

Indicators	Source	Period	Level
1. Mean Desired Family Size	Mysore Population Study (MPS)	1951-52	4.7
	Karnataka Fertility Survey (KFS)	1979-80	3.6
	National Family Health Survey (NFHS - 1)	1992-93	2.5
	NFHS - 2	1998-99	2.2
2. Per cent of Women not wanting Additional Children (Desire for Additional children among Currently Married, Fecund and Sterilized Women)	Mysore Population Study (MPS)	1951-52	31
	Bangalore Population Study (BPS)	1975	46
	K F S	1979-80	57
	NFHS - 1	1992-93	64
3. Son Preference (per cent who want next child to be a boy)	K F S	1979-80	52
	NFHS - 1	1992-93	44

Source: United Nations (1961) - Mysore Population Study.

Srinivasan, et al., (1978) - Bangalore Population Study.

Rao, et al., (1986) - Karnataka Fertility Survey.

PRC, ISEC and IIPS (1995) - National Family Health Survey - 1, Karnataka.

PRC, ISEC and IIPS (2000) - National Family Health Survey - 2, Karnataka (Preliminary Report).

from 49 to 67 per cent. The unmet need for family planning is the highest among Muslims (26 per cent) and Scheduled Castes (21 per cent).

Couple Protection Rate has gone up considerably during the last three decades from 9.3 in 1971 to 48.2 per cent in 1991. Interestingly up to 1980, CPR in the state was lower than the national average. But after 1980, Karnataka's CPR has always been higher than the national average. The latest official statistics show CPR is 55.6 per cent in 1997 in the state compared to 45.4 for all India (Table 9). Female sterilization is the most popular and preferred method with 43.6 per cent of currently married women accepting it. There are significant variations in the level of family planning performance by districts. Mandya has the highest CPR in 1993-94 (71 per cent), whereas Raichur (38) and Gulbarga (39) are having the lowest CPR. Six districts (Mandya, Hassan, Chikmagalur, Mysore, Kodagu and Shimoga) have achieved more than 60 per cent CPR. On the other hand, another six districts, (Raichur, Gulbarga, Bellary, Bijapur, Uttara Kannada and Dakshina Kannada) were having CPR below 50.

Fertility Levels and Differentials

The crude birth rate (CBR) has been declining in Karnataka since early 1970s. CBR which remained relatively stable at a higher level of about 40 or more in 1950s and 1960s, reached a level of about 28 by 1990. Estimates based on census data have indicated that CBR has declined from 32.2 during 1974-80 to 28.0 in 1984-90. The levels and trends in CBR and TFR were presented in Tables 10 and 11.

A comparative picture of both CBR and TFR in southern states and in India is presented in Tables 12 and 13. Karnataka had the highest CBR among southern states in 1950s. In fact, if we consider this, the extent of fertility decline in the state is quite remarkable.

Changes in fertility between 1951 and 1975 can be gauged by examining current fertility in different locations as stated in MPS and BPS, with both covering roughly the same geographic area. The crude birth rate declined 7.6 points in the rural hills, 2.0 points in the rural plains, 4.5 points in towns and 2.6 points in

Table 9. Couple Protection Rate by Methods in Karnataka

Year	Karnataka			India	
	Sterilization	IUD	CC	All Methods	All Methods
1969-70				9.2	9.4
1970-71				9.3	10.4
1971-72				9.7	12.2
1972-73				11.5	14.5
1973-74				11.9	14.7
1974-75	11.0	1.0	1.0	13.0	14.8
1975-76	12.4	1.2	2.8	16.4	17.0
1976-77	19.5	1.4	1.4	22.2	23.5
1977-78	20.0	0.9	1.2	22.1	22.5
1978-79	20.3	1.0	0.7	22.0	22.4
1979-80	20.8	1.3	0.8	22.9	22.3
1980-81	20.9	1.5	0.8	23.2	22.8
1981-82	22.6	1.6	0.9	24.1	23.7
1982-83	24.0	1.8	1.0	26.8	25.9
1983-84	26.0	—	—	29.5	29.5
1984-85	27.7	2.8	2.0	32.5	32.1
1985-86	30.8	3.7	1.8	36.3	34.9
1986-87	33.2	4.4	2.1	39.7	37.5
1987-88	35.0	4.8	2.5	42.3	39.8
1988-89	36.5	5.1	2.7	44.3	41.9
1989-90	39.0	—	—	46.0	43.3
1990-91	38.8	5.4	2.6	46.9	44.1
1991-92	39.6	5.8	2.8	48.2	43.6
1992-93	39.6	5.8	2.8	48.2	43.5
1993-94	40.7	6.3	3.4	50.4	45.4
1994-95	41.8	6.7	4.2	52.7	45.8
1995-96	42.8	7.4	4.1	54.3	46.5
1996-97	43.6	8.0	4.0	55.6	45.4
1997-98	43.6	8.6	3.8	57.7	50.8
1998-99	47.0	8.7	1.7	59.3	—

Source : Family Welfare Year Book, Government of India, (Various Years).

**Table 10. Levels and Trends in Crude Birth Rate
in Karnataka and India, 1971-99**

Year	KARNATAKA			INDIA		
	Total	Rural	Urban	Total	Rural	Urban
1971	31.7	34.6	25.3	36.9	38.9	30.1
1972	31.5	32.8	28.0	36.6	38.4	30.5
1973	28.9	30.1	26.1	34.6	35.9	28.9
1974	28.0	29.5	24.3	34.5	35.9	28.4
1975	27.7	29.7	22.5	35.2	36.7	28.5
1976	29.4	31.1	25.2	34.4	35.8	28.4
1977	26.3	27.2	24.0	33.0	34.3	27.8
1978	29.2	30.2	26.4	33.3	34.7	27.8
1979	28.1	29.0	25.9	33.1	34.3	28.3
1980	27.6	28.9	24.4	33.3	34.6	28.1
1981	28.3	29.2	25.7	33.9	35.6	27.0
1982	27.9	28.8	25.7	33.8	35.5	27.6
1983	29.1	30.2	26.0	33.7	35.3	28.3
1984	30.3	30.9	28.5	33.9	35.3	29.4
1985	29.6	30.9	26.2	32.9	34.3	28.1
1986	29.0	29.9	26.8	32.6	34.2	27.1
1987	28.9	29.9	26.3	32.2	33.7	27.4
1988	28.7	30.1	24.9	31.5	33.1	26.3
1989	28.0	29.1	25.1	30.6	32.2	25.2
1990	28.0	29.0	25.0	30.2	31.7	24.7
1991	26.9	27.9	24.0	29.5*	30.9	24.3
1992	26.3	27.4	23.3	29.2*	30.9	23.1
1993	25.5	26.7	23.1	28.7*	30.4	23.7
1994	25.0	26.0	22.7	28.7*	30.5	23.1
1995	24.2	25.1	22.1	28.3*	30.0	22.7
1996	23.0	24.2	20.3	27.5*	29.3	21.6
1997	22.7	23.9	20.1	27.2*	28.9	21.5
1998	22.0	23.1	19.4	26.5*	28.0	21.1
1999	22.3	23.7	19.2	26.1*	27.6	20.8

* Excludes Jammu and Kashmir due to non-receipt of returns

Source : Registrar General, India (various years).

Table 11. Levels and Trends in Total Fertility Rate in Karnataka and India, 1971-97

Year	KARNATAKA			INDIA		
	Total	Rural	Urban	Total	Rural	Urban
1971	4.4	4.8	3.4	5.2	5.4	4.1
1972	4.3	4.5	3.5	5.2	5.4	4.3
1973	3.9	4.2	3.3	4.9	5.2	3.7
1974	3.7	4.0	3.0	4.9	5.2	3.7
1975	3.7	4.1	2.8	4.9	5.2	3.7
1976	3.8	4.0	3.2	4.7	5.0	3.6
1977	3.6	3.8	3.0	4.5	4.8	3.4
1978	3.8	4.1	2.4	4.5	4.8	3.4
1979	3.6	3.9	3.0	4.4	4.7	3.4
1980	3.5	3.8	2.8	4.4	4.7	3.4
1981	3.6	3.8	3.0	4.5	4.8	3.3
1982	3.6	3.8	3.0	4.5	4.9	3.4
1983	3.7	4.0	3.0	4.5	4.9	3.4
1984	3.8	4.0	3.3	4.5	4.8	3.5
1985	3.6	3.9	2.9	4.3	4.6	3.3
1986	3.5	3.7	2.9	4.2	4.5	3.1
1987	3.4	3.7	2.9	4.1	4.4	3.2
1988	3.4	3.7	2.7	4.0	4.3	3.1
1989	3.3	3.5	2.7	3.9	4.2	2.8
1990	3.2	3.5	2.6	3.8	4.1	2.8
1991	3.1	3.3	2.5	3.6*	3.9	2.7
1992	2.9	3.1	2.4	3.6*	3.9	2.6
1993	2.9	3.1	2.5	3.5*	3.8	2.8
1994	2.8	3.1	2.4	3.5*	3.8	2.7
1995	2.7	2.9	2.3	3.5*	3.9	2.6
1996	2.6	2.8	2.1	3.4*	3.7	2.4
1997	2.5	2.7	2.1	3.3*	3.6	2.4

* Excludes Jammu and Kashmir due to non-receipt of returns
 Source : Registrar General, India (various years).

Table 12. Inter-censal Estimates for Crude Birth Rate in Southern States

Period	Karnataka	Andhra Pradesh	Kerala	Tamil Nadu	All India
1951-61	41.6	39.7	38.9	34.9	41.7
1961-71	39.9	39.2	37.5	36.8	41.2
1971-81	35.4	35.6	26.9	30.8	36.6
1981-91	30.9	27.9	24.7	26.4	29.5
Percentage Decline 1951-61 to 1971-81	14.9	10.3	30.8	11.7	12.2
1961-71 to 1971-81	11.3	9.2	28.3	16.3	11.2
1971-81 to 1981-91	25.7	29.7	36.5	24.3	29.2

Source: Rayappa and Lingaraju (1996).

Table 13. Total Fertility Rate for Southern States and India

Years	Karnataka	Andhra Pradesh	Kerala	Tamil Nadu	All India
1971-73	4.2	4.5	4.0	3.8	5.1
1972-74	4.0	4.5	3.7	3.7	5.0
1973-75	3.8	4.5	3.5	3.7	4.9
1974-76	3.7	4.5	3.4	3.7	4.8
1975-77	3.7	4.4	3.3	3.8	4.7
1976-78	3.7	4.3	3.1	3.7	4.6
1977-79	3.7	4.2	3.0	3.7	4.5
1978-80	3.6	4.1	3.0	3.5	4.4
1979-81	3.6	3.9	2.9	3.5	4.4

(Contd.....)

Years	Karnataka	Andhra Pradesh	Kerala	Tamil Nadu	All India
1980-82	3.6	3.9	2.9	3.4	4.5
1981-83	3.6	3.9	2.8	3.3	4.5
1982-84	3.7	3.9	2.6	3.3	4.5
1983-85	3.7	3.9	2.5	3.1	4.4
1984-86	3.6	3.8	2.4	2.9	4.3
1985-87	3.5	3.7	2.3	2.7	4.2
1986-88	3.4	3.6	2.2	2.6	4.1
1987-89	3.4	3.3	2.1	2.5	4.0
1988-90	3.3	3.2	2.0	2.4	3.9
1989-91	3.2	3.1	1.9	2.3	3.8
1990-92	3.1	3.0	1.8	2.2	3.7
1991-93	3.0	2.8	1.7	2.2	3.6
1992-94	2.9	2.7	1.7	2.1	3.5
1993-95	2.8	2.7	1.7	2.1	3.5
1994-96	2.7	2.6	1.8	2.1	3.5
1995-97	2.6	2.6	1.8	2.1	3.4
Annual Rate of Decline (in percentages)					
1971-73 to 1979-81	1.78	1.67	3.44	0.99	1.72
1980-92 to 1984-86	0.00	0.51	3.45	2.94	0.89
1985-87 to 1989-91	1.71	3.24	3.48	2.96	1.90
1990-92 to 1993-95	2.42	2.50	1.39	1.14	1.35

Source : Sample Registration System (Various Years).

Bangalore city over the 24 years period and it appears that the declines have been caused more by changes in marriage patterns than by changes in the number of children married couples have (Srinivasan et al., 1978). A comparison of data of these two surveys also indicates that there was a real increase in the potential fertility of the woman during the period 1951-1975, as a result of relaxation of some traditional checks such as prolonged breastfeeding, prohibition of sexual intercourse on certain days for social or religious reasons and prohibition of remarriages by widows. According to the MPS, the total fertility rate (15-44 age group) is 6.30, whereas in BPS it is 6.12. In both surveys, the average number of children born is substantially higher among Muslims than among other religious groups.

Selected Indicators of Fertility by Geographical Area in Karnataka from MPS and BPS

Indicators	Rural Hills		Rural Plains		Towns		Bangalore City	
	MPS	BPS	MPS	BPS	MPS	BPS	MPS	BPS
CBR (weighted)	44.6	37.0	39.9	37.9	39.8	35.3	33.0	30.4
General Fertility Rate	205	168	199	180	194	156	144	133
General Ever-married Fertility Rate	222	237	209	206	220	226	178	183
General Marital FertilityRate	264	252	237	223	251	242	199	192

Source: United Nations (1961); Srinivasan et al. (1978).

As per the NFHS - 1, for the three years periods of 1990-1992, the total fertility rate is 2.85 and crude birth rate is 26. The mean number of children ever born to women age 40-49 is 4.7 and mean ideal number of children is 2.5. According to NFHS - 2, the TFR for the state is 2.13. This estimate is slightly lower than the average of the SRS estimates (2.5) for the years 1996 and 1997. Further, a rural woman would have, on average, 0.36 children more than an urban woman. Over the six-year period between NFHS 1 and 2, fertility has declined in Karnataka from 2.85 children to 2.13. As per the NFHS - 2 (1998-99), the fertility in urban areas of the state is below the replacement level (TFR=1.89), but the fertility in rural areas (TFR=2.25) has yet to

reach replacement level. Bhat (1996) using the census population of 0-6 years in 1981 and 1991, estimated fertility level for the periods 1974-1980 and 1984-1990 by applying reverse survival method. For Karnataka, the CBR is 32.2 during 1974-1980 and 28 for the period 1984-1990. The national figures for the same periods are 43.9 and 31.6, respectively.

District Level Differentials

The TFR is above 4 in the backward districts of Bellary, Bidar, Gulbarga, Raichur and Bijapur in 1991. It is around 3.5 or below in districts of Bangalore Urban, Belgaum, Chikmagalur, Hassan, Chitradurga, Dakshina Kannada, Mandya, Mysore, Tumkur and Hassan with Kodagu recording the lowest, 2.77 (Table 14). Among districts, the per cent decline in TFR during 1981-91 is very significant in Hassan, Chikmagalur and Mandya, though with more or less similar IMR levels existing in many other districts. However, female literacy is relatively higher in those districts where the decline in TFR is more significant, except in Mandya. According to the district level estimates of the Registrar General of India (1997), the CBR is lowest in Mandya (25.56) and highest in Bellary (36.74) in 1991. In 1991, the GFR is highest in Bellary (157) and lowest in Kodagu (98) and Hassan (97) districts.

Even though we do not have detailed information regarding the fertility levels by caste (apart from SC/ST), it is interesting to examine the caste composition of high fertility districts of Karnataka. From the Second Backward Class Commission Report of Government of Karnataka (1986), the composition of major caste groups in each district is available. Based on an analysis of the data of recently conducted Rapid Household Survey of RCH Project (ISEC & IIPS, 2001), it was found that other backward castes (OBCs) have slightly higher fertility than caste Hindus. The concentration of certain backward communities, including Muslims, may explain to a certain extent the higher fertility in the five districts of northern Karnataka.

Concluding Observations

Although the family planning programme has been operational, it took nearly a half century for fertility to decline since the onset of mortality decline in the state. However, during the 80s and 90s, the state has experienced a considerable reduction in fertility,

Table 14. Total Fertility Rate, Female Literacy and IMR by District-wise - Karnataka

Region/ District/State	Total Fertility Rate				Female Literacy		IMR		Per cent Decline in TFR	
	1974-80	1984-90	1981	1991	1981	1991	1981	1991	1974-90	1981-91
Coastal and Mainad (5 districts)	3.9	2.8	4.6	3.5	37.7	47.9	73	48	28.2	23.9
Dakshina Kannada	3.5	2.5	4.8	3.6	45.0	59.1	55	29	28.6	25.0
Uttara Kannada	4.0	2.9	4.9	3.7	38.3	48.2	94	49	27.5	24.5
Chikmagalur	3.7	2.5	4.6	3.1	34.1	44.0	77	55	32.4	32.6
Kodagu	3.3	2.4	3.8	2.8	43.3	52.7	57	41	27.3	26.3
Shimoga	4.1	2.8	4.8	3.7	34.6	43.4	90	69	31.7	22.9
Southern Maidan (8 districts)	4.0	2.7	4.4	3.4	28.1	38.2	74	57	32.5	22.7
Bangalore Urban	3.8	2.5	4.1	3.5	41.7	59.7	60	50	34.2	14.6
Bangalore Rural	—	2.6	4.1	3.8	—	32.9	60	50	—	7.3
Chitradurga	4.5	3.4	4.9	3.6	27.1	36.3	71	51	24.4	26.5
Hassan	4.0	2.8	4.6	2.9	26.3	37.6	83	61	30.0	36.9
Kolar	4.4	3.1	4.6	3.9	22.8	32.2	69	56	29.5	15.2

(Contd.....)

Region/ District/State	Total Fertility Rate				Female Literacy		IMR		Per cent Decline in TFR	
	1974-80	1984-90	1981	1991	1981	1991	1981	1991	1974-90	1981-91
	Mandya	4.3	2.7	4.5	3.1	19.8	31.5	84	67	37.2
Mysore	4.0	2.9	4.4	3.6	23.0	32.1	77	57	27.5	18.2
Tumkur	4.2	2.9	4.5	3.5	29.4	35.8	83	64	30.9	22.2
Northern Maidan (7 districts)	4.7	4.4	4.9	4.4	19.0	27.5	82	66	6.4	10.2
Belgaum	4.2	3.7	4.4	3.6	23.9	32.5	67	50	11.9	18.2
Bellary	4.6	4.2	5.0	4.8	19.2	26.2	92	79	8.7	4.0
Bidar	4.9	5.1	5.1	4.8	14.4	24.8	81	66	-4.1	5.9
Bijapur	4.8	4.4	5.0	4.3	18.4	33.6	103	75	8.3	14.0
Dharwad	4.5	3.6	5.0	3.9	29.7	37.5	85	74	20.0	14.0
Gulbarga	4.8	4.9	4.8	4.7	13.7	20.1	80	59	-2.1	2.1
Raichur	4.9	5.0	5.2	4.6	13.6	17.8	67	59	-2.0	11.5
KARNATAKA	4.3	3.4	4.7	3.9	27.8	37.4	81	74	20.9	17.0

Source: Bhat, 1996; Registrar General, India (Various Years).

but lower in scale and slow in pace in comparison with its neighbouring states of Kerala, Tamil Nadu and to a certain extent, Andhra Pradesh. Latest SRS estimates indicate that the crude birth rate (CBR) is 22.3 (23.7 in rural and 19.2 in urban areas) and a natural growth rate of 14.6 in 1999. During the three decades (1951-1981), 38 per cent of decline in fertility had taken place. However, a substantial proportion (22 per cent) of decline took place within a span of 13 years (1981-94). The situation in pre-transition stage illustrates that the fertility levels in Karnataka in the 1950s was higher than other south Indian states. If this difference in the initial levels are taken into consideration, the extent of decline is quite remarkable. The NFHS - 2 (1998-99) shows that fertility in urban areas in the state is now below replacement level, although the fertility in rural areas has yet to reach replacement level. According to the projections of the Registrar General of India (1996), the state would attain the replacement level only by 2009.

With regard to many health and demographic indicators, there exist considerable regional disparities. Female age at marriage is relatively higher in the Malnad and Coastal districts, but there are regions where it is still below the legally prescribed minimum of 18 years. In the Southern and Coastal regions of Karnataka, mortality has declined considerably and any further decline may be hard to come by. Majority of the districts in the state have already achieved the desired levels of CBR and CPR. It is mainly the districts of Gulbarga division and parts of Belgaum division which are still persisting with high CBR and low CPR.

In other words, the high fertility in the state is essentially a problem of few districts in northern Karnataka. Based on a regional analysis using NFHS (1992-93) data, Bhat and Zavier (1999) observed that for almost all socio-demographic variables, the north-eastern plateau in the state (districts of Bidar, Bijapur, Gulbarga and Raichur) shows very poor performance (Table 15). The region has the lowest percentage of literate females (22 per cent) and the highest concentration of Muslims (12 per cent) in the state. The mean age at first marriage of females is less than 18 years and the couple protection rate is below 40. The backwardness and poor health infrastructure of the region are evident from the fact that it has the lowest percentage of institutional deliveries (17), whereas the state average is 38 per cent, and the lowest per cent of fully immunized children (30).

Table 15. Demographic and Socio-Economic Indicators by Region - Karnataka (NFHS - 1)

Indicators	North-Eastern Plateau	North-Western Plateau	Central Plateau	Southern Plateau	Malnad & Coastal	Karnataka
Percentage of literate females	22.1	37.9	41.3	34.6	57.9	38.4
Percentage of Muslims	12.1	10.2	11.5	8.8	8.7	10.6
Total Fertility Rate	4.7	3.6	3.3	3.3	3.0	3.5
Under 5 mortality rate	161	103	125	104	92	123
Completed Family Size	5.3	4.7	4.5	4.4	4.6	4.6
Mean age at first marriage of females	17.3	18.7	19.7	19.6	22.4	19.4
Percentage of currently married women (15-49)	75.2	75.2	73.6	72.8	62.7	72.4
Couple Protection Rate	33.9	52.1	48.4	57.2	60.3	49.4
Percentage of birth assisted by trained health personnel	35.4	62.8	54.5	46.2	71.0	52.4

(Contd.....)

Indicators	North-Eastern Plateau	North-Western Plateau	Central Plateau	Southern Plateau	Mainad & Coastal	Karnataka
Percentage of under-weight children (1-47 months)	62.6	54.9	52.1	51.9	39.5	53.4
Percentage of fully immunized children (12-23 months)	30.3	40.2	63.2	62.5	59.1	50.3
Percentage of women received ante-natal care	71.7	86.8	86.7	92.8	95.0	85.3
Percentage of institutional deliveries	17.1	44.9	43.0	35.6	57.5	38.2

Note: Regional Classification of districts

North-Eastern Plateau : Bidar, Bijapur, Gulbarga, Raichur

North-Western Plateau : Belgaum, Dharwad

Central Plateau : Bangalore, Bellary, Chitradurga, Kolar, Tumkur

Southern Plateau : Hassan, Mandya, Mysore

Mainad & Coastal : Dakshina Kannada, Uttara Kannada, Kodagu, Chikmagalur, Shimoga

Source: Bhat and Zavier (1999)

The districts in northern maidan and the region as a whole show lower levels of achievement compared to other parts of the state with regard to human development and health indices, as well as in the availability of public health care facilities (see Table 16). The socio-economic backwardness of the region characterised by limited exposure to mass media and low status of women in a way explain the tardy decline of fertility in the northern districts.

To a great extent, the achievement of demographic transition in Karnataka depends on the overall development of these districts. It may not be difficult to achieve the replacement level by 2005, considering the potentials of health and family welfare services. The recent effort to streamline the effective implementation of reproductive and child health programme in Northern Karnataka is the reason behind this optimistic note. If the state can make substantial efforts for the improvements in the quality of life in the northern backward districts, fertility transition may be sooner than expected.

Various demographic surveys and official statistics clearly show that Karnataka is gradually on the way to replacement level of fertility. Except the five districts of backward northern Karnataka region, in the remaining parts of the state, the reduction in fertility is quite remarkable. Most of the developmental indicators, generally attributed for decline in fertility including female literacy, have yet to reach the threshold level in these backward districts. The poor health infrastructure existing here made it extremely difficult to effectively implement the family planning programmes. No programme can make a significant dent in fertility reduction without certain levels of infrastructural support and conducive social atmosphere. Unlike what happened in Kerala and Tamil Nadu, and to some extent in Andhra Pradesh, this region in Karnataka experienced no remarkable change in social and economic development, no serious governmental intervention, and no significant social and political movements which can influence the fertility behaviour and attitudes of the people. This late realisation of 'developmental neglect' as well as the growing demand of people from this region for more share in resource allocation has brought the issue of regional disparities to the centre-stage of developmental debate in the state. The recent efforts of the state government to minimise the regional imbalances and the new thrust on decentralised administration of education, health and family welfare services under the panchayati raj set-up provide

Table 16. Human Development Indices and Health Infrastructural Indicators by Districts of Karnataka

Region/ District/ State	# of medical institutions per lakh population	# of doctors per lakh rural population	# of PHCs per lakh rural population	Health Index (HI)	Gender-related Health Index (GHI)	Human Development Index (HDI)	Gender - related Development Index (GDI)
Coastal and Malnad (5 districts)	7.78	13.60	5.84	0.685	0.689	0.552	0.537
Dakshina Kannada	5.71	9	6.14	0.730	0.870	0.592	0.588
Uttara Kannada	7.48	12	5.92	0.699	0.677	0.533	0.511
Chikmagalur	9.19	16	5.38	0.660	0.626	0.524	0.505
Kodagu	9.50	18	6.88	0.717	0.718	0.630	0.615
Shimoga	7.04	13	4.86	0.618	0.553	0.483	0.468
Southern Maidan (8 districts)	6.07	11.86	5.26	0.647	0.599	0.473	0.451
Bangalore Urban	3.18	17	9.38	0.680	0.696	0.601	0.546
Bangalore Rural	6.30	—	2.09	0.695	0.619	0.472	0.454
Chitradurga	9.19	13	4.83	0.615	0.613	0.466	0.448
Hassan	6.06	13	6.88	0.673	0.596	0.473	0.460
Kolar	5.56	11	4.25	0.631	0.588	0.443	0.426
Mandya	6.56	10	4.45	0.650	0.545	0.444	0.423

(Contd.....)

Region/ District/ State	# of medical institutions per lakh population	# of doctors per lakh rural population	# of PHCs per lakh rural population	Health Index (HI)	Gender-related Health Index (GHI)	Human Development Index (HDI)	Gender-related Development Index (GDI)
Mysore	6.24	12	5.71	0.638	0.569	0.440	0.414
Tumkur	5.50	7	4.49	0.594	0.567	0.447	0.435
Northern Maidan (7 districts)	4.37	10.57	4.01	0.641	0.538	0.433	0.412
Belgaum	4.20	8	4.24	0.668	0.610	0.471	0.447
Bellary	5.12	15	3.92	0.589	0.484	0.429	0.409
Bidar	4.18	9	3.54	0.646	0.523	0.419	0.403
Bijapur	3.83	7	4.07	0.629	0.523	0.443	0.420
Dharwad	4.35	11	4.03	0.630	0.546	0.459	0.442
Gulbarga	5.04	15	4.43	0.650	0.530	0.412	0.388
Raichur	3.86	9	3.82	0.676	0.553	0.399	0.376
KARNATAKA	5.24	11	4.64	0.618	0.546	0.470	0.451

Note : HDI, GDI, HI, GHI are for the year 1991.

No. of Doctors (Allopathy system) for the year 1992.

No. of Medical Institutions and PHCs for the year 1996-97.

Sources : Govt. of Karnataka (1999), NCAER (2001).

an opportunity for overall improvement. The just released preliminary results of the 2001 census indicate that Karnataka is the laggard among the south Indian states with regard to demographic transition. With the winds of demographic change sweeping across south India resulting in more and more districts attaining replacement-level fertility, the pressure is high on these laggard districts of northern Karnataka to perform and reach the goal.

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