1974

World Population Year

THE POPULATION OF INDIA

C. I. C. R. E. D. Series

1971 Census Publications of India

ALL INDIA SERIES

Paper 1 of 1971—Supplement. Provisional population tables. $ 4.14/Sh 36 d 10.

Paper 2 of 1972—Religion. Hardboard : $ 1.68/Sh 10 d 11 ; Paperback : $ 0.96/Sh 6 d 3.

Paper 3 of 1972. Economic characteristics of population (selected tables). $ 0.90/£ 0.29.

Paper 1 of 1974—Report on resurvey of economic questions. $ 0.85/£ 0.25.

Paper 2 of 1974—Age and life tables (one per cent sample). $ 0.47/£ 0.16.

Part II Special—All-India census tables (estimated from one per cent sample data). $ 2.61/£ 0.85.

Part VII (i)—Special tables for graduates and technical personnel (G I to G IV). $ 4.68/£ 1.52.

Part VII (ii)—Special tables for graduates and technical personnel (G V to G XII). $ 4.50/£ 1.46.

Census centenary seminar 1972 : Summaries of papers and proceedings. $ 2.07/£ 0.67.

INDIAN CENSUS CENTENARY MONOGRAPHS

1—Indian census in perspective. $ 3.15/Sh 20 d 5.

2—Indian census through hundred years (Part I). $ 4.86/£ 1.58. Part II. $ 3.96/£ 1.29.

3—Inter-censal growth of population. $ 2.97/£ 0.96.

4—Civil registration system in India—perspective. $ 2.16/£ 0.70.

5—Bibliography of census publications. $ 3.78/£ 1.23.

6—Changes in sex ratio. $ 1.89/£ 0 61.

7—Economic and social dimensions of regionalization (an Indo-USSR collaborative study). $ 6.30/£ 2.05.

8—Age and marital status. $ 2.61/£ 0.85.

9—Extracts from all-India census reports on literacy. $ 1.98/£ 0.64.

10—Language handbook on mother-tongues in census. $ 3.06/£ 0.99.

STATE SERIES

2. *ANDHRA PRADESH*

Part II A—General population tables. $ 3.24/£ 1.05.

3. *ASSAM*

Part II A—General population tables. $ 2.97/£ 0.96.

4. *BIHAR*

(i) Part III B—Establishment tables. $ 3.60/£ 1.17.

(ii) Part IV—Housing report & tables. $ 1.89/£ 0.61.

5. *GUJARAT*

(i) Part VI A—Town directory. $ 3.51/£ 1.14.
(ii) Part VI B—Special survey report on Sanad town. $ 2.25/£ 0.73.
(iii) Part IX A—Administrative atlas. $ 12.06/£ 3.59.

6. *HARYANA*

Part II A—General population tables. $ 2.07/£ 0.67.

8. *JAMMU & KASHMIR*

(i) Part III—Establishment report & tables. $ 5.58/£ 1.81.
(ii) Housing report & tables. $ 2.67/Sh 17 d 4.
(iii) Part VI—Town directory. $ 2.78/Sh. 18.

9. *KERALA*

(i) Portrait of population. $ 2.16/£ 0.20.
(ii) Part II A—General population tables. $ 2.25/£ 0.73.
(iii) Part IV—Housing report & tables. $ 1.98/£ 0.64.

11. *MAHARASHTRA*

Part II A—General population tables. $ 3.51/£ 1.14.

13. *MEGHALAYA*

Part II A—General population tables. $ 2.79/£ 0.91.

14. *MYSORE (KARNATAKA)*

(i) Part II A - General population tables. $ 8.10/£ 2.62.
(ii) Part IV –Housing report & tables. $ 3.78/£ 1.23.

16. *ORISSA*

(i) Portrait of population. $ 2.79/£ 0.91.
(ii) Part II A—General population tables. $ 3.33/£ 1.08.
(iii) Part IV—Housing report & tables. $ 3.24/£ 1.05.

17. *PUNJAB*

(i) Part II A—General population tables. $ 3.06/£ 0.99.
(ii) Part IV—Housing report & tables. $ 2.88/£ 0.93.

18. *RAJASTHAN*

(i) Part II A—General population tables. $ 3.78/£ 1.23.
(ii) Part IV A—Housing report & tables. $ 2.70/£ 0.88.

19. *TAMIL NADU*

(i) Part II A—General population tables. $ 5.04/£ 1.64.
(ii) Part III A—Report on establishments. $ 5.40/£ 1.75.
(iii) Part III B—Establishment tables. $ 5.22/£ 1.70.
(iv) Part IV—Housing report & tables. $ 3.33/£ 0.88.
(v) Part IX A—Administrative atlas. Vol. I. $ 7.74/£ 2.51, Vol. II $ 7.56/£ 2.45.

21. UTTAR PRADESH

(i) Portrait of population. $ 1.89/£ 0.61.
(ii) Part II B (i)—Economic tables. $ 3.51/£ 1.14.
(iii) Part IV A—Housing report. $ 2.79/£ 0.91.

22. WEST BENGAL

(i) Part II A—General population tables. $ 3.78/£ 1.23.
(ii) Part II B(i)—Economic tables. $ 2.52/£ 0.82.
(iii) Part IV A—Housing report. $ 1.98/£ 0.64.

24. ARUNACHAL PRADESH

(i) Part II A—General population tables. $ 3.01/£ 0.97.
(ii) Part III A & B—Establishment reports & tables. $ 3.06/£ 0.99.
(iii) Part IV A & B—Housing report & tables. $ 4.04/£ 1.32.

25. CHANDIGARH

Part III—Establishment report & tables. $ 2.33/£ 0.75.
Part IV A & B—Housing report & tables. $ 2.70/£ 0.88.

29. LACCADIVE, MINICOY & AMINDIVI ISLANDS (LAKSHADWEEP)

Part II A—General population tables. $ 1.32/£ 0.43.

30. PONDICHERRY

Part II A—General population tables. $ 1.98/£ 0.64.

(1971 Census publications of India can be had from Registrar General, India, 2-A, Mansingh Road, New Delhi - 110011 or Controller of Publications, Department of Publications, Civil Lines, Delhi-110006 (INDIA) on prepayment. Prices are inclusive of packing, forwarding and transhipment charges by surface mail).

1974 World Population Year

CICRED SERIES

THE POPULATION OF INDIA

Ministry of Home Affairs

Office of the Registrar General and Census Commissioner, India.

CONTENTS

	Preface	...	i
I	Population growth	...	1
II	Components of growth	...	9
III	Composition of population	...	48
IV	Population distribution and internal migration	...	76
V	Labour force	...	94
VI	Population projections 1971—2001	...	119
VII	Consequences of population growth	...	132

ERRATA

Page	*Line*	*For*	*Read*
16	25	table	table 11
17	10	table	table 12
31	17	Period of amenorrhea	*delete*
73	15	Note	Source

PREFACE

The Committee for International Co-ordination of National Research in Demography (CICRED) took up the task of bringing out national population monographs in connection with the U. N. World Population Year (1974). The committee entrusted the work of preparing the Indian volume to the office of the Registrar General and Census Commissioner, India. The structure and contents of this monograph are according to the uniform pattern laid for this series.

The work was initiated by my distinguished predecessor, Mr. A. Chandra Sekhar. It has been carried out ably by Mr. S. Raghavachari, Assistant Registrar General, Mr. K.S. Natarajan, Senior Research Officer, Messrs. A.K. Biswas and S.S. Bawa, Investigators. The printing cell of my office saw the proofs through in record time. I am very grateful to them for the great trouble they have taken in preparing the volume.

I am indebted to Mr. Sham Malhotra of Sunlight Printers, Delhi, for the care with which he has done the printing.

The views expressed in this monograph are not necessarily the views of the Government of India.

New Delhi
15 September 1974

R. B. CHARI
Registrar General, India.

Printed in India
SUNLIGHT PRINTERS
DELHI 110006

1. POPULATION GROWTH

INDIA is the second most populated country in the world. Its population in mid-1974 is estimated at 586 million. The Indian terrain may be divided into five broad physiographical regions:—(i) the Himalaya and the eastern hills, (ii) the great plains, (iii) the peninsular plateau, (iv) the coastal plains and (v) the islands. The Indo-Gangetic plain, noted for its size, fertility and antiquity, stretches for about 3,200 km. from the Rajasthan desert in the west to the Brahmaputra valley in the east. The plain in Rajasthan is an arid region consisting of shifting sand dunes. The rest is an alluvial plain watered by the Sutlej-Beas system in the north-west, the Ganga-Yamuna system in the centre and the Brahmaputra system in the east. Every year, the floods replace a great part of the soil. The entire plain is one of the world's great agricultural regions and one of the densely populated areas of the country.

Bound on the north by the Vindhya and Satpura hills, on the west by the Sahyadri (Western ghats) and on the east by the Eastern ghats, the peninsular Deccan plateau is a triangular region formed of various types of rocks, sloping from west to east. The rivers Narmada and Tapti flow west through a structural depression between the Vindhya and Satpura hills. All the other major rivers of the plateau—Godavari, Bhima, Krishna, Tungabhadra and Kaveri—rise in the western ghats and flow east. The Deccan plateau is one of the less densely populated areas of India.

The west coast, called Konkan in the north and Malabar in the south, is a narrow strip of land between the Western ghats and the Arabian sea. The east coast is much broader than the west because of the formation of fertile deltas by the major river systems. The Mahanadi delta in Orissa, the Godavari-Krishna

delta in Andhra Pradesh and the Kaveri delta in Tamil Nadu are the widest parts of the eastern coast. Here again, the population is dense.

India is a federal republic comprising 21 states and nine union territories. Mizoram was made union territorry in early 1972. It was till then part of Assam and in this book, it is treated as such. For administrative purposes, the states are split into districts and districts into sub-divisions, tehsils, police stations or anchals.

The tradition of taking a regular census was established in 1872 in India. The census of 1872 was taken in different provinces at different times. The practice of taking a synchronous census was initiated in 1881 and, since then, a census has been conducted every ten years, culminating in the latest census of 1971. Attempts have been made by several scholars to estimate the population of India in earlier times. It may generally be assumed that the population was more or less static from ancient times to A.D. 1600, maintaining itself by a slender balance of births over deaths. Since then, it grew slowly but steadily to 255 million by 1871. Table 1 gives estimates that have been made of the population of India prior to 1871. These are only indicative of the general pattern of growth of population.

TABLE 1 : POPULATION OF INDIA PRIOR TO 1881

Year	Source	Area (sq. miles)	Population ('000)
1820	Hamilton	1,280,000	134,000
1834	McCulloch	n.a.	130,000
1844	McCulloch	1,214,483	131,752
1855	Parl. paper	1,466,576	180,884
1865	Parl. paper	1,463,212	190,905*
1871	Davis	n.a.	255,000
1874-75	Parl. paper	1,399,569	237,979*
1881	Census	1,290,320	250,205*

Soures : Bhattacharya, report on population estimates of India, 1820-1830 Census of India, 1961.

*Figures for Burma omitted.

Table 2 gives the population of India according to the censuses for the period 1901-71 (along with the decadal growth rate). The coverage was not uniform over all these years as the areas canvassed have progressively increased from one census to the next. No adjustment has been made for the pre-1901 figures. In 1936, Burma was separated from India. Pakistan was carved out in 1947. By 1951, the old princely states had been added to the Indian Union. The states were reorganised on a linguistic basis in 1956. Subsequent to the 1961 census, some boundary changes have taken place. These changes have, however, been allowed for in the figures for the period 1901-1971. Table 2 brings out the fact that a steadily increasing trend in population growth can be observed from 1921.

TABLE 2 : POPULATION TRENDS IN INDIA (1901—71)

Year	Total Population			Decade variation (per cent)
	Persons	Males	Females	
1901	238,337,313	120,760,506	117,330,453	—
1911	252,005,470	128,340,309	123,665,161	5.73
1921	251,239,492	128,504,733	122,734,759	—0.30
1931	278,867,430	142,873,864	135,734,938	11.00
1941	318,539,060	163,622,013	154,632,036	14.23
1951	360,950,365	185,456,252	175,494,113	13.31
1961	439,072,582	226,208,008	212,864,574	21.64
1971	547,949,809	283,936,614	264,013,195	24.80

The distribution of population by sex of Pondicherry for 1901 (246,354), 1931 (258,628) and 1941 (285,011) is not available. The figures for these years are, therefore, exclusive of these populations so far as distribution by sex is concerned. The 1901 sex-wise distribution of Chandannagar (26,831) of West Bengal and Gonda (18,810) of Uttar Pradesh is not available.

Source: Pocket book of population statistics (1972), Office of the Registrar General, India.

Prior to 1921, India experienced many famines and epidemics. Drought, floods and epidemics of cholera, smallpox, plague and malaria took their toll in many parts of the country. There were a number of famines like those of Mysore (1877), parts of Madras (1878), parts of Bombay (1876-77, 1896-97 and 1899-1900). Bubonic plague was estimated to have taken a toll of a million lives in 1896. The decade 1901-11 was comparatively normal, the country having recovered from the plague and severe famines of the previous decade. The decade 1911-21 which shows the smallest increase in population saw the great influenza epidemic of 1918. It is said to have taken a toll of 12 million lives in the country. Cholera, plague, kala-azar and malaria also raged in several parts of the country. There were two successive bad seasons and extensive failure of crops, coming in the wake of the 1914-18 war.

After 1921, however, with improvement in transport and communication facilities, movement of food articles became much easier, with the result that famine was brought under control to a greater extent than was possible earlier. Public health measures paved the way for reduction in the intensity of communicable diseases so that calamities on a national scale were avoided.

The years after 1921 can be divided into two parts—1921-1951 and 1951-1971. The dividing line marks the first census of independent India and the institution of several programmes for economic development under the five-year plans. The population was growing slowly but steadily during 1921-51. The annual growth rate rose from—0.30% in 1911-21 to 1.3% by 1941-51. Then came a sharp rise, reaching 2.4% in 1961-71. The effective implementation of public health measures and greater availability of medicines and antibiotics during the last two decades brought about a heavy reduction in mortality rates, with fertility remaining more or less constant. This has resulted in a spurt in the growth rate in the last two decades.

Population growth by states. The population and the decadal growth rates from 1901 in the various states and union territories of India are presented in

Table 3 (pp 6 & 7). Though international migration has been negligible, there has been considerable inter-state migration which has influenced these rates. States like Bihar, Haryana, Punjab, Tamil Nadu and Uttar Pradesh show generally low growth rates while Andhra Pradesh, Assam, Gujarat, Maharashtra and Kerala indicate higher growth rates. Though Uttar Pradesh and Tamil Nadu are both heavily out-migrating states, their low growth rates result from different demographic conditions. While the low growth rate of Uttar Pradesh results from heavy out-migration combined with high birth and death rates, the situation in Tamil Nadu is that of lower birth and death rates combined with heavy out-migration.

Density. The average density of population in India has gone up from 77 in 1901 to about 178 persons per square kilometre in 1971. Though the population of India is very large, this average density is far from being the highest in the world when one compares it with conditions in the Netherlands, West Germany, Japan, Britain or Taiwan. However, average density means very little in a large and diversified country like India. A district-wise analysis of density indicates that districts having density above average fall in one belt. It starts in the plains of Punjab, runs along the Ganga valley, covers the east coast and goes round the tip of India up the west coast. This belt of high density encloses a fairly wide basin of thinly populated area starting from Koraput district (Orissa) in the east and cutting right across the country to Jaisalmer (Rajasthan), encompassing almost all the districts of Madhya Pradesh and Rajasthan. The country's population is thus heavily concentrated on the well-watered plains of India as is to be expected of a country where the people depend heavily on monsoon-oriented agriculture.

If the districts are grouped by different size classes of density per square kilometre, an interesting pattern emerges (table 4).

Districts having a density of 300 and above per square kilometre account for two-fifths of the population but less than one-sixth of the area. On the other hand, three-tenths of India's area which has a density of less than 100 per

TABLE 3 : DECADAL VARIATION IN POPULATION SINCE 1901

Unit	Population in 0000's								Percentage decadal variation (1901-71)						
	1901	1911	1921	1931	1941	1951	1961	1971	01—11	11—21	21—31	31—41	41—51	51—61	61—71
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Andhra Pradesh	1,907	2,145	2,142	2,420	2,729	3,112	3,598	4,350	12.49	(0.13)	12.99	12.75	14.02	15.65	20.90
2. Assam	338	394	474	569	686	824	1,113	1,496	16.85	20.17	20.13	20.49	20.10	35.06	34.71
3. Bihar	2,731	2,832	2,813	3,135	3,517	3,879	4,646	5,635	3.67	(0.66)	11.45	12.20	10.27	19.77	21.31
4. Gujarat	910	980	1,018	1,149	1,370	1,626	2,063	2,670	7.79	3.79	12.92	19.25	18.69	26.88	29.39
5. Haryana	462	418	426	456	527	567	759	1,004	(9.70)	1.95	7.14	15.63	7.60	33.79	32.23
6. Himachal Pradesh	192	190	193	203	226	239	281	346	(1.22)	1.65	5.23	11.54	5.42	17.87	23.04
7. Jammu & Kashmir	214	229	242	267	295	325	356	462	7.16	5.75	10.14	10.36	10.42	9.44	29.65
8. Kerala	640	715	780	951	1,103	1,355	1,690	2,135	11.75	9.16	21.85	16.04	22.82	24.76	26.29
9. Madhya Pradesh	1,686	1,944	1,917	2,136	2,399	2,607	3,237	4,165	15.30	(1.38)	11.39	12.34	8.67	24.17	28.67
10. Maharashtra	1,939	2,148	2,085	2,396	2,683	3,200	3,955	5,041	10.74	(2.91)	14.91	11.99	19.27	23.60	27 45
11. Manipur	28	35	38	45	51	58	78	107	21.71	10.92	16.04	14.92	12.80	35.04	37.53
12. Meghalaya	34	39	42	47	54	61	75	101	15.58	7.29	12.89	15.06	8.94	25.97	31.50
13. Mysore (Karnataka)	1,306	1,353	1,338	1,463	1,626	1,940	2,359	2,930	3.60	(1.09)	19.38	11.09	19.36	21.57	24.22
14. Nagaland	10	15	16	18	19	21	37	52	46.76	6.55	12.62	6.04	8.60	14.07	39.88
15. Orissa	1,030	1,138	1,116	1,249	1,377	1,465	1,755	2,195	10.44	(1.94)	11.94	10.22	6.38	19.82	25.05
16. Punjab	755	673	715	801	960	916	1,114	1,355	10.78	6.26	12.02	19.82	(4.58)	21.56	21.70
17. Rajasthan	1,029	1,098	1,029	1,175	1,386	1,597	2,016	2,577	6.70	(6.29)	14.14	18.01	15.20	26.20	27.83
18. Tamil Nadu	1,925	2,090	2,163	2,347	2,627	3,012	3,369	4,120	8.57	3.47	8.52	11.91	14.66	11.85	22 30

19.	Tripura	17	23	30	38	57	64	114	156	32.48	32.59	25.23	34.14	24.56	78.71	36.28
20.	Uttar Pradesh	4,865	4,815	4,667	4,978	5,653	6,322	7,375	8,834	(0.97)	(3.08)	6.66	13.57	11.82	16.66	19.79
21.	West Bengal	1,694	1,800	1,747	1,890	2,323	2,630	3,493	4,431	6.25	(2.91)	8.14	22.93	13.22	32.80	26.87
22.	Andaman & Nicobar Islands	3	3	3	3	3	3	6	12	7.34	2.37	8.78	14.61	(8.28)	105.19	81.17
23.	Arunachal Pradesh	—	—	—	—	—	—	34	47	—	—	—	—	—	—	38.91
24.	Chandigarh	2	2	2	2	2	2	12	26	(16.07)	(1.65)	9.10	14.11	7.47	394.13	114.59
25.	Dadra & Nagar Haveli	2	3	3	4	4	4	6	7	19.52	6.99	23.23	5.70	2.70	39.56	27.96
26.	Delhi	41	41	49	64	92	174	266	407	1.98	18.03	30.26	44.27	99.00	52.44	52.93
27.	Goa, Daman & Diu	51	52	50	54	58	60	63	86	2.31	(3.53)	8.15	7.76	2.11	5.14	36.88
28.	Laccadive, Minicoy & Amindivi Islands	1	2	1	2	2	2	2	3	4.85	(6.31)	17.62	14.43	14.60	14.61	31.95
29.	Pondicherry	25	26	24	26	29	32	37	47	4.39	(5.06)	5.93	10.20	11.31	16.34	27.81

Note—(i) Figures for 1901–1961 are from provisional population totals, Paper 1 of 1971 (ii) 1971 figures are from Paper 1 of 1972, final population totals (iii) Figures within brackets indicate negative variations.

square kilometre supports only about one-tenth of its population. There are some agricultural districts like Muzaffarpur, Darbhanga and Saran in north Bihar and Trichur, Ernakulam, Alleppey and Trivandrum in Kerala where the density rises above 600 per square kilometre.

TABLE 4 : PERCENTAGE DISTRIBUTION OF AREA AND POPULATION BY DENSITY CLASSES (1971)

Density (km^2)	Percentage by	
	Area	Pop.
Below 100	29.8	9.1
100-200	41.1	31.3
200-300	11.9	16.4
300 and above	17.2	43.2

Note : Calculated from Provisional population totals—Paper 1 of 1971—Supplement.

2. COMPONENTS OF GROWTH

With international migration negligible, for decades now, India's population growth has been influenced only by its fertility and mortality trends. Inter-state internal migration does play a part, but this is an area where information is meagre. Though India has a long tradition of civil registration system, vital rates derived from these records are defective even to this day. It is only in highly urbanised areas that vital registration can be termed reasonably good. In order to obtain information on vital rates at the national level we have, therefore, to turn to sources other than the civil registration system. It has long been the practice in India to obtain average decadal vital rates indirectly from the age distribution of the population census. Over the last two decades, a number of localised surveys have come up with some data on the fertility characteristics of the population. From 1958, vital rates on a national scale are available from the various rounds of the National Sample Survey (NSS) on a large-scale basis. Despite the fact that NSS is conducted with care and attention to details, the data available from it suffer from several non-sampling errors like recall lapse and border bias which go with any retrospective demographic survey. Only for the last five or six years are reasonably reliable estimates of vital rates being made available by the Sample Registration Scheme (SRS) initiated in 1963-64. Though the precise levels and trends in fertility and mortality may be open to debate, certain broad differentials can be clearly perceived. We shall discuss in this chapter several indicators of fertility and mortality levels and differentials as available from various sources.

The birth rate in India has long remained at a high level.

The slight downward trend in the rates for certain years are not very conclusive because of errors in census data and the assumptions made in the estimation

procedure. Only in the last decade of 1961-70 are there reasons to believe that there has been a modest decline in fertility subsequent to 1966 as a result of the impact of the family planning programmes.

TABLE 5 : AVERAGE DECADE (BIRTH RATE IN INDIA) (1901-71)

Decade	Birth rate
1901-11	49.2
1911-21	48.1
1921-31	46.4
1931-41	45.2
1941-51	39.9
1951-61	41.7
1961-71	41.1

Note—Rates from 1901-11 to 1931-41 are by Kingsley Davis computed by the reverse survival method. For the next three decades these are as computed by the Registrar General. The estimates for 1941-51 and 1951-61 are based on census differencing method and that of 1961-71 on reverse survival method. In view of the different smoothing procedures adopted in each census, the figures are not strictly comparable.

Despite the special effort made in the SRS dual record system to net as many events as possible, experience has shown that there is still some unavoidable under-count of events. If we put it roughly at 5% on the basis of some intensive enquiries made on the relative performance of the local registrars and supervisors

TABLE 6 : BIRTH RATE FROM SRS (1968-72)

Year	Rural	Urban	Total
1968	39.0	n.a.	n.a.
1969	38.8	32.6	37.6
1970	38.9	29.7	36.8
1971	38.9	30.1	36.9
1972	38.4	30.5	36.6

Total for 1969 estimated by combining rural and urban rates in ratio 4 : 1.
Source—SRS Bulletin, vol. VII, no. 3.

the average birth rate for the period 1969 to 1971 comes to 39. Compared to a level of 41.7 for 1951-61, table 6 shows that there has been a fall in fertility in 1961-70. Family planning statistics show that prior to 1966 only about 1.5 million sterilisations were made whereas 7.1 million were done in 1966-71. The IUCD programme was initiated only in 1965-66. According to the rough calculations made by the Family Planning department, the births averted during 1961-66 were only 0.5 million whereas for the period 1966-70 the figure was 7.4 million.

Though the decline in fertility at the national level is still in its incipient stage, a perceptible reduction in fertility is observable in localised areas which are either highly urbanised or in which intensive family planning programmes have been implemented. The results of a number of demographic studies conducted in these areas over the years are shown in table 7.

TABLE 7 : REDUCTION IN BIRTH RATE AS SEEN THROUGH LOCAL STUDIES

	Area of study	Years	Birth rate
1.	Gandhigram project area, Madurai (Tamil Nadu)	1962	40.0
		1965	36.3
2.	Singur rural area of the All India institute of hygiene & public health, Calcutta	1962	39.3
		1966	34.2
3.	Chetla urban areas of the All India institute of hygiene & public health, Calcutta	1961	29.0
		1966	24.0
4.	Tea estates of the Assam branch of the Indian tea association, Assam	1960	43.4
		1966	31.2
5.	Doom Dooma area, Assam valley	1960	41.0
		1965	31.9
6.	Dooar's plantation, West Bengal	1963	35.1
		1965	27.8
7.	Indian statistical institute project, Calcutta	1963	26.0
		1964	22.0
8.	Demographic research centre, Dharwar (Mysore)	1961-62	37.1
		1968-69	31.2
9.	Najafgarh block, Rural Delhi	1966	37.5
		1968	31.9
10.	Haryana study	1961	36.0
		1968	32.4
11.	Gujarat	1966	43.0
		1968	40.6

Source—Family Planning in India, programme information 1971-72.

While in general, fertility level in India is quite high, there are differences from one area to other. Table 8 relating to the period 1941-60 brings out these differentials.

TABLE 8 : ESTIMATED BIRTH RATES BY ZONES

Zone	1941-50	1951-60	1958-59 (rural only)
India	40	41.7	38.3
North zone	38-39	43.6	40.6
East zone	38-39	43.3	34.1
South zone	36-37	38.5	34.3
West zone	42	42.8	38.9
Central zone	44	42.0	44.1
North-west zone	41-42	—	—

Source—Estimates of the Census actuary, 1951 & 1961 censuses.
NSS report no. 76 for 1958-59.

Table 9 gives SRS birth rates for 1968-1972. Birth rates higher than the national level are observed generally in Gujarat, Madhya Pradesh, Uttar Pradesh and Rajasthan while in the southern states of Kerala, Tamil Nadu, Mysore, Andhra Pradesh and Maharashtra, birth rates are lower than the national average.

Among the northern states, Punjab shows a birth rate below the national level. The rates for West Bengal, Orissa, Assam and Madhya Pradesh are closer to the national average.

The generally lower birth rates in urban areas may be seen from table 9. The differential is marked in the cases of Gujarat, Jammu & Kashmir, Maharashtra, Tamil Nadu, and West Bengal. This is reflected at the all-India level also. While urban areas reflect a generally falling trend in birth rates over the years covered, this is not always true in respect of rural areas.

TABLE 9 : CRUDE BIRTH RATES BY STATES ACCORDING TO SRS.

	States	SRS (Rural)						SRS (Urban)			
		1967	1968	1969	1970	1971	1972	1969	1970	1971	1972
1.	Andhra Pradesh	32.2	36.6	35.4	34.7	35.6	32.4	—	33.8	31.3	37.5
2.	Assam	39.9	45.5	40.8	39.5	39.3	36.0	31.1	32.0	31.0	25.4
3.	Gujarat	44.6	45.5	42.3	43.0	41.5	41.6	—	34.9	35.8	32.1
4.	Haryana	—	—	39.2	38.0	44.2	37.7	—	27.9	32.4	29.6
5.	Jammu & Kashmir	42.1	41.2	39.5	35.0	36.0	36.8	28.5	25.6	21.6	20.7
6.	Kerala	35.3	33.2	31.8	31.9	30.9	33.5	—	30.1	29.6	29.7
7.	Maharashtra	35.2	36.9	32.9	32.1	33.7	31.7	—	30.4	29.0	26.1
8.	Mysore	35.0	33.7	34.1	35.1	34.6	30.8	28.9	27.8	25.3	27.0
9.	Punjab	—	33.6	33.6	34.7	35.0	31.0	28.2	30.6	31.4	26.2
10.	Rajasthan	36.3	46.0	44.0	39.7	44.4	38.2	37.7	33.3	83.4	32.8
11.	Tamil Nadu	—	—	33.8	32.6	32.7	35.4	—	23.8	27.8	26.7
12.	Uttar Pradesh	45.7	45.4	45.6	46.9	46.3	43.4	35.9	34.7	34.5	31.9
13.	Bihar	—	35.0	—	—	32.2	33.1	30.1	28.2	27.9	25.4
14.	Madhya Pradesh	46.0	40.7	40.0	37.4	44.1	39.3	—	32.1	34.3	29.7
15.	Orissa	36.2	39.0	38.8	38.5	34.7	—	32.5	34.0	33.0	—
16.	West Bengal	34.2	32.2	33.3	—	—	—	—	21.7	24.8	25.1
	INDIA	—	39.0	38.8	38.8	38.8	37.1	32.6	29.7	30.0	28.6

Haryana figures for 1967 and 1968 included under Punjab.

The average number of children born brings out the trend in fertility over time. Available data on the completed family size from the various studies are presented in table 10.

TABLE 10 : AVERAGE NUMBER OF CHILDREN BORN ALIVE PER WOMAN OF UNBROKEN MARRIAGE TILL SHE COMPLETES REPRODUCTIVE AGE

Sl. No.	Survey	Rural	Urban
	Bengal survey (1947-1949)		
1.	Ballygunj—upper middle class	—	5.7
2.	Beniatola—lower middle class	—	6.2
3.	Singur	7.3	—
	Gokhale institute of politics and economic survey		
4.	Poona (1951-52)	6.4	6.4
5.	Poona (1956)	—	5.9
6.	Nasik (1952-54)	6.2	6.6
7.	Kolaba (1953-54)	6.1	5.8
8.	Satara North (1952-54)	6.3	6.1
	UN and Government of India Mysore study		
9.	Bangalore city (1952)	—	6.2
10.	Rural areas (1952)	6.0	—
	NSS		
11.	2nd and 4th rounds (couple fertility) (1951-52)	5.9	5.9
12.	16th round (family planning schedule) (1960-61)	—	6.5
	17th round (1961-62)	4.7	4.9
	Survey by Registrar General (maternity data of 1951 Census)		
13.	Travancore-Cochin	6.6	6.4
14.	East Madhya Pradesh	6.1	6.3
15.	West Bengal	6.0	—
16.	Sample census of births & deaths in seven districts of U.P. (1952-53)	6.2	—

TABLE 10 : AVERAGE NUMBER OF CHILDREN BORN ALIVE PER WOMAN OF UNBROKEN MARRIAGE TILL SHE COMPLETES REPRODUCTIVE AGE—Concld.

Sl. No.	Survey	Rural	Urban
17.	Registration data (1961)	—	6.6
18.	Post-census survey 1961 for currently married women (43+)		
	Assam	4.3	5.0
	Jammu & Kashmir	4.7	4.9
	Kerala	6.0	5.7
	Madhya Pradesh	5.7	5.9
	Mysore	4.7	5.1
	Punjab	5.6	5.7
	Rajasthan	4.1	4.5
	Delhi	6.4	5.7
	Gujarat	5.0	5.1
	Uttar Pradesh	4.2	4.4
	Others		
19.	Kanpur and Lucknow survey (1951)	—	7.8
20.	Patna survey (1956)	—	5.9
21.	Delhi survey (1958-60)	7.1	—
22.	Greater Bombay fertility survey(1966)	—	4.6
23.	Central India survey (1958)		
	City	—	6.6
	Town	—	7.1
	Village	6.3	—
24.	Family planning practices survey (45 years+) (O.R. group Baroda)	16.0	—

NSS 16th round results relate to women aged 47 and above. NSS 17th round results relate to couples married during 1921-30. As the mean age at marriage for this cohort was around 16, the results may pertain to women aged 44 & above. Thus the results are only broadly comparable.

R.G.'s survey relates to women who had at least one child birth and who remained married on census day.

These studies show that the number of children born to women who had married young and remained in wedlock during the entire reproductive span is

6-7 children on the average. It has been reported that if 'ever married' women alone are considered, irrespective of whether or not they become 'widowed' or separated before completing the reproductive span, the average number of children becomes 4 to 5 children. The results of the various demographic studies have also shown that if we consider the women who remained married till the end of the reproductive life, urban fertility might have been a little lower than rural fertility. At the national level, it can, therefore, be stated that judged either from the level of the birth rate or the completed family size, India's fertility had remained quite high.

Data on age specific fertility rates available from NSS and SRS are presented in table 11.

TABLE 11 : AGE SPECIFIC FERTILITY RATE

Age	Rural				Urban	
	NSS round		SRS round		NSS round	
	14	19	1968	1969	16	19
10-14	1.03	2.47	—	—	0.9	—
15-19	143.91	83.16	109.43	97.91	99.6	67.51
20-24	263.56	247.19	251.44	261.91	226.9	251.93
25-29	244.31	241.29	272.61	266.92	208.0	271.53
30-34	188.34	195.36	224.29	226.02	160.4	195.06
35-39	127.85	177.53	172.33	158.28	102.6	130.91
40-44	49.59	79.10	81.56	77.06	41.8	12.13
45-49	17.58	33.38	39.70	35.50	9.9	8.51
50-54	2.28	3.62	—	—	—	—

Source : (i) Compiled from NSS reports.
(ii) Measures of Fertility & Mortality in India & SRS analytical series no. 2.

The schedules of age specific fertility given in table bring out a characteristic feature of Indian fertility. The fertility level remains quite high in a long span of 20-39 years and then only comes down gradually. Considering that

marriage is universal in the country and that more than 90 per cent of the women become married by age 20, this high fertility in age group 20-29 is crucial for the effectiveness of family planning programmes. Though this pattern is similar both in rural and urban areas, the level of fertility in urban areas is lower at all ages compared with rural. If we consider only the marital fertility rates, the differential between rural and urban disappears for the NSS rounds considered.

Rural-urban differential. Available data on the completed family size from several surveys conducted during 1947-1968 given in table 10 reveal that urban fertility might be a little lower than rural. A better idea of the differential in recent years can be had from table which presents SRS rural and urban birth rates for 1967 to 1972. Lower birth rates for urban areas compared to rural area also revealed by NSS data shown in table 12.

TABLE 12 : NSS BIRTH RATE FOR RURAL AND URBAN (1961-71)

Round No.		Rural	Urban
XVII	Sept. 61—July 62	36.0	34.0
XVIII	Feb. 63—June 64	37.6	31.9
XIX	July 64—Jan. 65	37.1	32.0
XX	July 65—Aug. 66	37.1	29.2
XXI	July 66—Aug. 67	36.7	31.3

The state-wise figures shown in table 9 bring out clearly a differential between rural and urban areas. Even within urban areas, there are reasons to believe that large cities exhibit relatively low fertility rates. According to the urban fertility surveys, the birth rates in Greater Bombay, Delhi and Calcutta city were well below the national average. The low birth rate for Bombay or Calcutta is partly due to the low proportion of women in the population. However, even when allowances were made for the differences in the age, sex and marital status composition between cities and all India, the urban birth rate was found to be significantly lower than that of all India. Possible deficiencies in

birth registration and lack of knowledge of the extent of transferred birth in these cities (births occurring to mothers outside their places of residence) made it difficult to base our judgment only on the level of the estimated birth rate. The percentage of births of fourth and higher order occurring in Greater Bombay or Calcutta was around 30 as compared with 40 for all-India. There is also evidence of the increasing extent of family limitation in the cities. A survey conducted by the International institute for population studies, Bombay, found that for 100 births occurring in Bombay city five are followed by sterilisation of either mother or father. It was also found that if women became pregnant after attending family planning clinics, 15 per cent got themselves sterilised after the birth of a child.

The education of the wife seems to be an important factor determining the level of fertility. To study the effect of education on fertility, the urban couples were classified by educational level. The number of children born alive classified by the educational standard of women of age 47 and above (those who have completed their reproductive period) computed from the data collected in the 16th round of NSS are presented in table 13. This round was conducted in urban areas only.

The number of children born alive to those wives who are 'illiterate', 'below primary' and 'primary' was 6.6. A clear reduction in the number of children born is seen for couples with the educational standard of wife above the middle level. The number of children dying also decreases with educational advancement. Though a slight reduction in the number of children born is visible with the increasing educational standard of the husband, the reduction is not as steep as in the case of female. Part of the difference may be attributed to higher age at marriage among women with high school or university education. No information on this is available at the national level. Local studies like the Mysore population study and the Central India study have, however, focussed attention on this

topic. According to the Central India study, the mean number of children ever born is 4.7 for the uneducated group, 4.3 for the primary group and 3.4 for those with more than primary education. When differences in present age are controlled, the mean number of live births drops for wives with education above primary school at all ages. The Mysore population study revealed that the differences in the average number of children persisted even when the averages were standardised by duration and age at marriage, but became smaller.

TABLE 13 : AVERAGE NUMBER OF CHILDREN BORN AND LIVING PER COUPLE WITH THE AGE OF WIFE ABOVE 47 BY EDUCATIONAL STANDARD OF HUSBAND/WIFE (URBAN)

Educational standard of wife	Illiterate	Below primary	Primary	Middle	Matric	Inter & above	Total
Wife							
No. of children born alive	6.65	6.90	6.57	5.04	4.58	2.01@	6.54
No. living	3.97	4.62	5.13	4.02	3.58	1.83@	4.09
No. dead	2.68	2.28	1.44	1.02	1.00	0.18@	2.45
Husband							
No. of children born alive	7.04	6.19	6.50	6.63	6.56	5.54	6.54
No. living	4.28	3.59	4.00	4.33	4.93	4.44	4.09
No. dead	2.76	2.60	2.50	2.30	1.63	1.10	2.45

@Number of sample couples below 20.
Source : NSS report 16th round (urban).

Economic status and fertility. It was found in the NSS 16th round that when households were classified into fractile groups by levels of per capita monthly household expenditure, the number of children born per couple decreased with

an increase in per capita expenditure of the households. The number of children born alive was 4.53, 4.16, 3.72, 3.33 and 2.84 for the lowest, second, third, fourth and fifth 20% fractile group. In a similar study in the NSS 17th round, the population of all-India was divided into 20 fractile groups on the basis of per capita household expenditure. The birth rates were worked out for rural and urban areas and are presented in table 14.

TABLE 14 : ANNUAL RATES OF BIRTH BY FRACTILE GROUPS OF PER CAPITA MONTHLY HOUSEHOLD EXPENDITURE (RUPEES)

Fractile group	Urban	Rural
0—5	42.93	42.07
5—10	40.20	41.93
10—15	41.60	42.04
15—20	41.21	42.98
20—25	39.43	37.91
25—30	37.72	40.66
30—35	25.71	39.65
35—40	35.99	32.62
40—45	36.16	35.41
45—50	39.33	36.14
50—55	33.10	35.77
55—60	31.56	33.64
60—65	35.80	31.88
65—70	30.62	36.13
70—75	31.07	31.45
75—80	25.79	33.91
80—85	26.50	28.83
85—90	22.97	31.30
90—95	19.20	21.62
95—100	14.95	20.39

Source : NSS 17th round.

While birth rate steadily declined with rising per capita expenditure, the decline was more marked in the case of the upper 10% of the population in rural areas and the upper 25% in urban areas. Table 15 which summarises the data of table 14 indicates that there is considerable variation in birth rate by economic status. However, one has to bear in mind the fact that the per capita household expenditure is itself influenced by a birth or a death.

TALBE 15 : BIRTH RATE BY FRACTILE GROUPS ON THE BASIS OF PER CAPITA MONTHLY EXPENDITURE IN RURAL AND URBAN AREAS OF INDIA

	Birth rate		
Area	Below 30	30-40	40 & above
Rural	Highest 20%	Next 45%	lowest 35%
Urban	Highest 25%	Next 55%	lowest 20%

Source : NSS 17th round.

A birth in the household decreases the per capita household expenditure. Thus large families have automatically lower per capita expenditure. On the other hand families with large income may normally consist of couples with a long duration of marriage. It was found in the Central India study that the average number of children born ranged from 3.8 for those earning Rs. 1,500-1,999 per annum to 4.8 for those earning Rs. 1,000-1,499. The lowest income group (under Rs. 500) and the highest income group (over Rs. 2,000) had an identical averages of 4.6 live births which indicated the absence of any direct association between fertility and income. To probe this further, the averages for income categories were classified by the present age of the wives. When the age differences were controlled, a slight decrease was noticed with increasing income.

Occupation and fertility. When the couples were classified on the basis of the occupations of husband into unskilled, artisan, trade, clerical, professional

and administrative, no clear differentials were observed in the number of children born. Even when differentials in the age of wife were controlled no particular differential emerged. Similar tabulations for Bangalore city, showing the average number of children born alive to ever married women classified by their present age and economic status (as indicated in most cases by the occupation of the husband or of the woman herself, if she was employed) supports this conclusion. No apparent relationship between fertility and status could be established, although among women of completed fertility, lower non-manual groups and skilled manuals show slightly larger families than the other occupational groups. The above local studies were conducted at a time when family planning was not much prevalent in India. In recent years, however the trends might have changed, but no recent survey provides data in this regard.

Religion and fertility. Data on differentials by religion are meagre. Though NSS has collected particulars regarding religion in various rounds, the data have not yet been tabulated. The few studies that have gone into this aspect reveal that Muslims in general have a slightly higher level of fertility than Hindus in terms of the completed family size while Christians rank third as can be seen from NSS 16th round data presented in table 16.

TABLE 16 : MEAN NO. OF CHILDREN BORN ALIVE PER EVER-MARRIED WOMAN WHO HAS COMPLETED HER REPRODUCTIVE PERIOD

Source	Area	Number of children born alive		
		Hindus	Muslims	Christians
1. Mysore population study (ever married women aged 45+)	1. Bangalore city	5.4	5.7	4.7
	2. Towns	5.2	6.7	5.5
	3. Rural areas	4.8	5.0	n.a.
2. NSS 16th round (for women aged 47+)	Urban	6.5	7.6	5.9
3. Kanpur survey		7.0	8.0	n.a.
4. Central India study		6.5	6.4	n.a.

For the period 1891-1941, Kingsley Davis had worked out the child-woman ratio (ratio of children aged 0-4 per 1,000 women in ages 15-39) from the census age distribution. These are given in table 17.

TABLE 17 : CHILD WOMAN RATIO FOR HINDUS AND MUSLIMS (1891-1941)

Year	Children 0-4 per 1,000 women 15—39		Children 0-4 per 1,000 married women 15—39	
	Hindus	Muslims	Hindus	Muslims
1891	723	826	936	1,017
1901	624	748	769	884
1911	669	768	799	894
1921	626	715	765	842
1931	739	827	885	965
1941	670	751	804	874

Source : Kingsley Davis, The population of India & Pakistan.

Whether all women or all married women only were considered, Muslims had registered a much higher child-woman ratio than Hindus in all the six censuses beginning with 1891. Age-sex distribution by religion is not available for the latest three censuses. Marriage being universal in both the communities the differences may be in part attributed to the greater prevalence of widow marriage among Muslims.

Factors affecting fertility. The fertility of any community or a socio-economic group is the result of the combined effect of several institutional and biological factors. Among the institutional factors affecting fertility, the most important are age at marriage, incidence of widowhood and widow re-marriage and the value placed on children by that society. Under biological factors can be listed religious and traditional taboos on sex relationship, specially after child-birth, length of breast-feeding, incidence of primary and secondary sterility and

length of post-partum amenorrhea. In the absence of voluntary effort at contraception these factors have a significant impact on the pattern of fertility of any community. Though information on these aspects of the problem are very meagre at the national level, a number of local demographic studies have considered these aspects. Available data from these surveys are discussed below.

Impact of age at marriage on fertility. In India the age at marriage of women has increased very slowly over the years from 12.5 years in 1891 to 17.1 in 1971. This slow increase is governed by the hold that longstanding social customs have over the community, resisting any marked change even over generations. An increase in age at marriage would, however, lower fertility as it cuts short the reproductive span of the woman at the crucial younger ages. Some of the studies have considered this aspect of the problem in their effort to estimate the reduction in fertility associated with a given increase in age at marriage. Table 18 gives the average number of children born to ever married women of completed fertility by different age-at marriage cohorts in a few selected states, based on data collected in a fertility survey conducted along with the 1961 census.

TABLE 18 : AVERAGE NUMBER OF CHILDREN BORN PER EVER-MARRIED WOMAN OF COMPLETED FERTILITY IN DIFFERENT STATES BY DIFFERENT MARRIAGE AGES

Rural				STATE	Urban			
Marriage age					Marriage age			
Below 18	18—22	23+	All ages		Below 18	18—22	23+	All ages
5.1	4.2	3.2	4.7	Jammu & Kashmir	5.2	4.2	3.7	4.9
5.7	5.2	4.4	5.5	Punjab	6.0	5.5	4.7	5 8
6.2	5.5	3.9	6.0	Kerala	6.2	5.5	4.0	5.8
4.0	4.0	4.7	4.2	Uttar Pradesh	4.5	4.0	3.7	4.4

Source : Vital statistics of India (1961).

These results, considered along with the broad plateau observed in the ages 20-39 in the age specific fertility rates curve, show that a significant reduction in fertility can be expected only when age at marriage is increased to 23 years or over. This observation is also supported by the results of the Mysore population study according to which the average number of children born to women aged 45-54 with unbroken marriages and married in the age groups under 14, 14-17, 18-21 and 22 and over were 6.7, 6.0, 5.7 and 4.6 respectively in Bangalore city. In the rural areas of Mysore state, the corresponding figures for the first three groups were 6.5, 5.9 and 4.7 respectively.

On the basis of available data some studies had attempted to estimate the extent of reduction in fertility if age-at-marriage is raised to about 20 years. A sub-group on demographic and social studies in the Ministry of Health came to the conclusion that if women were not allowed to marry before the age of 20 the birth rate would decrease by anything between 8 and 21 per cent in the long run. The best estimate of the long run reduction was considered to be of the order of 16 per cent in the national birth rate.

Widowhood and fertility. Early and almost universal marriage associated with high death rates had in the past resulted in a large number of widows in India.

TABLE 19 : PERCENTAGE OF PERSONS WHO ARE WIDOWED OR DIVORCED (1881-1971)

Year	Males	Females
1881	4.9	18.7
1891	4.8	17.6
1901	5.4	18.0
1911	5.4	17.3
1921	6.4	17.5
1931	5.4	15.5
1941	5.7	15.1
1951	5.1	12.8
1961	4.1	11.3
1971	3.1	9.1

Source : D. Natarajan, Age & Marital Status census centenary ; Monograph no. 8. The 1971 figures are based on one per cent sampledata.

Added to this, the widely prevalent custom of non-remarriage of widows had worked as a natural mechanism for keeping fertility down in contrast to the effect of early age at marriage. Table 19 shows that though the percentage widowed had a tendency to decline it is only since 1951 that the reduction has been significant.

The percentage widowed in the reproductive age groups for two recent censuses 1961 and 1971 is as follows.

TABLE 20 : PERCENTAGE WIDOWED IN REPRODUCTIVE AGE GROUPS (FEMALES)

Age group	1961	1971
15-19	0.6	0.3
20-24	1.3	0.9
25-29	2.9	1.9
30-34	6.4	3.9
35-39	11.2	7.0
40-44	20.7	14.2
45-49	28.8	20.4

The 1971 figures are based on one per cent sample data.

This age distribution gives an idea of the negative effect of widowhood on the effective reproductive span of woman in their reproductive age groups. The table also brings out the reduction in the extent of widowhood among women in reproductive ages owing to general improvement in mortality during the recent decades.

It has been estimated in a study based on census age and marital status distribution that the mean age at widowhood for women in their reproductive age groups was around 34 years in 1951-61. The study indicated that married women missed 13 to 10 years due to widowhood out of the 30 years of the average fertile period. The Mysore population study indicated that greater prevalence of and

earlier age at widowhood tend to depress the average number of children born to women in the rural areas more than in the urban areas. A comparison of the average number of children born to women of unbroken marriage during the entire reproductive period with that of ever married women who have completed their reproductive period further showed that widowhood had the effect of reducing the number of children born by 0.7 for Bangalore city, by 1.1 for the towns and by 1.0 for the rural areas. With the increasing expectation of life at birth in the coming years, the reduction in the proportion widowed coupled with greater prevalence of widow re-marriage would have a tendency to increase effective fertility in the absence of contraception.

Under the biological factors affecting fertility one should consider the age at menarche and the age at menopause, reproductive wastage and primary and secondary sterility. The few demographic studies show that the average age at menarche for the Indian woman is 13-14 years.

TABLE 21 : AGE AT MENARCHE FROM VARIOUS SURVEYS

	Source	Age at menarche
1.	Six rural communities (Gokhale institute)	13.8
2.	Health survey of school children of ages 10-18 in Poona city	14.1
3.	Final report on the pilot studies in family planning	13.9
4.	Reproductive pattern of Bengali women—	
	(a) Rural	13.3
	(b) Middle class Hindu women	13.5
	(c) Upper class Hindu women	13.3
	(d) Muslim women	12.3
5.	Eight family planning clinics in Delhi	14.2
6.	Lodi colony (Delhi)	14.3
7.	Survey of the B. D. D. chawls, Naigaum (Bombay)	13-14

Two surveys—one in 11 villages of Punjab and the other in six rural communities around Poona conducted by the Gokhale institute of politics & economics have reported that the median age at menopause lay between 44 and 45 years. A survey on Bengali women around Calcutta reported the range of median ages for the four group of women considered by them to be 42-44.

Reproductive wastage. There are only a few localised studies on abortion and still births. The study of the reproductive pattern of Bengali women conducted in 1947 and 1949 showed that still birth rate was around 19 to 22 per thousand live births. According to the Mysore population study (1951-52), the still birth rate was 37 per thousand live births in Bangalore city and 32 in the rural plains of Mysore state. The 1954 study of six rural communities also gave a still birth rate of 28 per thousand live births. According to SRS for the years 1968 and 1969, the still birth rates were 22.8 and 22.1 for the rural areas of India. These rates may be underestimates because the omission of recording the still births as in the case of live births and deaths is highly probable. Though the Mysore population study has brought out a differential in favour of rural areas, it is difficult to say whether this differential is genuine as no supporting evidence is available from other sources.

The study of the reproductive pattern of Bengali women had reported a rate of 22 to 54 abortions per 1,000 pregnancies. According to the Mysore population study, the abortion rate was 79 in Bangalore city and only 41 in the rural areas of Mysore state. In contrast to these high rates, the study of six rural communities had revealed a low figure of only 25 abortions. All these studies had collected information on abortion as a part of a general study of fertility. Abortion being a sensitive subject, this would have also contributed to a varying extent of omissions in the reporting of abortions. The recent studies conducted during 1962 and 1968 have laid special emphasis on collection of data on the pregnancy history of women to examine the extent of abortion and the impact of socio-economic factors

on it. In a study at the family planning clinic located in Lakshmibai Nagar, New Delhi, a sample of 1,000 women out of 3,075 registered in the clinic was considered. In the second study conducted in Chembur (Bombay), the pregnancy history of 243 currently married women in age group 15-45 was collected. The abortion rates revealed by these studies were respectively 103 and 57 per 1,000 pregnancies. The Delhi study reported an abortion rate of 116.5 among those who were using family planning methods before attending the clinic and 88.7 among non-users. No such differential was recorded in the Bombay study. A positive correlation between the educational level and abortion rate was established by the Delhi study. When different income groups were considered it was found that the abortion rate was as low as 34.9 in the case of low income group drawing Rs. 100/- a month or less as against a large figure of 149.7 among the higher strata drawing a salary of Rs. 501-750 a month. It is not clear whether there is greater prevalence of abortion as a mechanism for preventing births among the economically and educationally higher level groups compared to the lower levels. It is also necessary to question whether the economically and educationally backward persons report their pregnancy histories as accurately as others.

Primary sterility. A few localised surveys have collected information on the proportion of the childless among the married couples who have passed their reproductive period. The census of India of 1921, 1931 and 1951 had also collected this information in certain states. The results of these surveys presented in table 22 show that the proportion of the childless may be assumed to be around 6 to 7 per cent. This appears to be much lower than the rate for countries like Britain, the United States, Sweden, Norway and Italy where the proportions are reported to be 8.3, 10.2, 6.5, 7.4 and 14.1 respectively. It is quite probable that the higher percentages in these countries may be due to voluntary causes. In India where there is a premium on married couples having at least one child in order to perpetuate the family, voluntary causes are not likly to operate in this sphere.

TABLE 22 : PROPORTION OF ULTIMATELY CHILDLESS AMONG THE MARRIED

	Source	Percentage
1.	Census of India 1921, Punjab (for marriages of 30 years' duration)	6.0
2.	Census of India (1931) (women married at ages above 30 and duration of marriage 15 and above)	7.5
3.	Six rural communities in Maharashtra	4.7
4.	Central India study (1958) (for women 45 years & above)	3.9
5.	NSS 2nd and 4th round (with marriage duration 22 years and above for pre-1930 marriages)	7.5
6.	Reproductive pattern of Bengali women (1947-49)	
	Singur (Rural area)	4.8
	Baniatola (Middle class Hindu)	6.7
	Ballygunge (upper class Hindu)	4.7
	Park circus (Muslims)	10.5
7.	Fertility survey and sample census of the Registrar General, India (1961)	
	(a) Assam	
	Rural	5.6
	Urban	4.4
	(b) Jammu & Kashmir	
	Rural	6.0
	Urban	4.9
	(c) Kerala	
	Rural	2.6
	Urban	2.4
	(d) Madhya Pradesh	
	Rural	5.9
	Urban	6.8
	(e) Punjab	
	Rural	3.4
	Urban	3.6
	(f) Rajasthan	
	Rural	6.0
	Urban	6.5
	(g) Delhi	
	Rural	1.0
	Urban	3.2
	(h) Uttar Pradesh	
	Rural	6.4
	Urban	7.1

An interesting study of the effect of age at marriage on sterility was made in the 1931 census. It revealed that the proportion 'childless' increases with the increase in age at marriage. Classifying women by both age at marriage and duration of marriage, it was found that for each duration of marriage the proportion sterile increased with the age at marriage (Table 23).

TABLE 23 : PERCENTAGE OF CHILDLESS MARRIAGES BY DURATION OF MARRIAGE

Age of wife at marriage	Duration of marriage (in years)				All durations
	0-4	5-9	10-14	15 & above	
All ages	30.29	16.40	11.33	5.63	13.90
0—12	50.06	16.54	5.19	2.21*	8.04
13—14	30.94	15.34	9.91	4.47	12.59
15—19	29.67	17.33	13.32	7.24	15.81
20—29	27.87	16.09	11.64	6.55	13.58
30 and over	31.72	23.25	15.49	7.46	16.37

* Number of sample women was small.
Source : Census of India, paper no. 5 of 1953, Maternity data.

Period of amenorrhea. These findings were corroborated by more recent studies by the Registrar General, India, conducted in 1961. Relevant results relating to a few selected states are indicated in table 24. It shows no significant rural-urban differential.

TABLE 24 : PERCENTAGE OF CHILDLESS AMONG WOMEN WHO HAVE PASSED REPRODUCTIVE AGE BY AGE AT MARRIAGE

State	Percentage by age at marriage							
	Below 18		18-22		23 & over		all ages	
	R	U	R	U	R	U	R	U
Jammu & Kashmir	4.6	4.5	8.1	5.6	11.1	6.8	6.0	4.9
Punjab	2.9	2.6	4.0	5.7	7.6	9.6	3.4	30.6
Kerala	1.3	1.9	4.3	2.9	8.9	5.3	2.6	2.4
Uttar Pradesh	6.1	6.2	7.3	9.2	6.4	10.7	6.4	7.1
Madhya Pradesh	4.6	5.2	8.6	11.2	32.5	23.9	5.9	6.8

Source : S. P. Jain, 'Indian fertility : our knowledge and gaps'. Journal of family welfare, June 1964.

Secondary sterility. Secondary sterility is a function of age and parity. According to the sample census conducted in Madhya Pradesh in 1960 (Table 25), the proportion of women who were sterile increased with an increase in parity. The ratio remains higher in the urban areas compared to rural upto second parity after which it goes below rural levels. According to the study of reproductive history of Bengali women based on the pregnancy the history of 250 women aged 35-44, the sterility ratio was substantially lower than those indicated in table 22. In this study the ratios were 2.1, 4.2, 1.3, 6.7 and 11.9 after the first, second, third, fourth, and fifth births respectively. A similar study in Delhi conducted in 1958-61 indicated a closer agreement with the results of the Bengal study.

TABLE 25 : STERILITY RATIO FOR WOMEN OF COMPLETED FAMILY SIZE

	Parity order									
	0	1	2	3	4	5	6	7	8	9
Rural	6	6	7	9	13	17	23	27	37	43
Urban	7	7	8	8	11	18	19	20	31	35

Source : Sample census count of population in Madhya Pradesh 1960, mimeographed.

As in the case of primary sterility, secondary sterility also increases with an increase in age at marriage as shown in table 26 for the rural-urban areas of Madhya Pradesh.

TABLE 26 : STERILITY RATIO FOR WOMEN OF COMPLETED FAMILY SIZE BY AGE AT MARRIAGE

Age at marriage		Parity order									
		0	1	2	3	4	5	6	7	8	9
18	Rural	5	6	7	9	13	17	23	27	37	41
	Urban	5	7	7	7	10	17	17	18	32	36
18-22	Rural	9	10	10	12	18	21	27	24	40	57
	Urban	11	10	12	13	18	22	29	32	28	33
23+	Rural	33	19	20	25	22	31	24	42*	35*	—
	Urban	24*	17*	—	—	—	—	—	—	—	—

*Based on number of women between 26 & 50.
Source : Ibid.

PERIOD OF AMENORRHEA

Another biological factor which has an impact on the level of fertility is the period of amenorrhea. It has been estimated that a couple living together from menarche to the woman's menopause should on an average have 12 births, if uninterrupted by contraception. As against this biological limit, the completed family size in India is around 7-8, despite early marriage and the lack of contraceptive practice. One explanation for this is the long period of post-partum amenorrhea observed in India. The estimates of the average period of amenorrhea from the various studies conducted from time to time are presented in table 27 indicating that the period is high in India.

TABLE 27 : LENGTH OF AMENORRHEA IN DIFFERENT SURVEYS

	Source	Years of study	Average period of amenorrhea (months)	Average period of lactation (in months)
1.	Six rural communities	1955-56	15.1	20.0
2.	Poona city survey	1964	9.0	13.1
3.	Chinhat & Mohanlalganj blocks of Lucknow district (relating to live births)	—	12.5	—
4	Athoor block, Gandhigram, Tamil Nadu	1965	14.2	21.7
5.	Survey of post-partum amenorrhea among women in Bombay	1965-67	9.1	—

The level of nutrition, the dietary habits, general health conditions and the practice of prolonged breast feeding seem to influence the length of amenorrhea. A number of studies conducted elsewhere have indicated a high correlation between the period of lactation and the length of amenorrhea. Table 27 above also indicates a high period of lactation.

Another indirect indication of the prolonged period of amenorrhea is the

average interval between births. Information on this aspect is available from the NSS 2nd, 4th and 17th rounds for different marriage cohorts cross-classified by order of birth.

TABLE 28 : AVERAGE INTERVAL (IN MONTHS) SINCE PREVIOUS BIRTHS BY ORDER OF BIRTH — ALL-INDIA

Order of birth	Rural					Urban		
	2nd round		7th round	17th round		7th round	17th round	
	Married before 1930	Married after 1930		Married before 1941	Married after 1941		Married before 1941	Married after 1941
1st*	86.5	53.4	—	54.1	37.9	—	46.3	32.4
2nd	45.4	33.7	34.4	41.1	32.7	34.1	38.8	31.5
3rd	47.1	32.6	31.3	39.6	31.8	41.4	37.5	30.7
4th	44.5	32.5	33.9	37.9	30.8	27.8	36.5	30.0
5th	—	—	32.8	36.1	30.4	36.5	34.7	29.6
6th	—	—	32.0	35.3	29.6	35.0	33.7	29.4
7th	—	—	—	34.7	28.3	—	33.3	28.4
8th & above	—	—	—	32.7	27.6	—	31.1	25.9
ALL	—	54.6	32.9	40.8	33.5	35.4	37.6	31.0

* The first birth figures relate to interval between age at marriage & first birth in case of the 2nd round while it relates to age at effective marriage & first birth in the case of the 17th round.

The Bengal study estimated the interval as 2.9 years in Ballyganj and Bamiatola and 3.0 years in Singur for women aged 35 years and over.

This discussion on various factors affecting fertility indicates that though early and universal marriage favours high fertility in India, there are a number of other factors like restrictions on the re-marriage of widows and prolonged breast feeding which tend to diminish it.

MORTALITY TREND IN INDIA

The almost static level of a high death rate upto 1921 followed by a progressively decreasing trend as shown in table 29 can be attributed to the economic and social progress that had taken place in India.

TABLE 29: ESTIMATED ANNUAL DEATH RATES—INDIA

Year	Deaths per thousand population
1881-1891	41.3
1891-1901	44.4
1901-1911	42.6
1911-1921	48.6
1921-1931	36.3
1931-1941	31.2
1941-1951	27.4
1951-1961	22.8
1961-1971	18.9

For decades upto 1941 as estimated by Kingsley Davis. Last three figures are as estimated by the Registrar General.

The numerous famines which occurred during the middle and latter half of the 19th century focussed attention on the need for increasing food supplies. Efforts were made to bring more land under irrigation and to improve the quality of agricultural practices. The development of a better communications system helped in moving food supplies to areas in need in proper time. More organised efforts to attack epidemics, particularly smallpox, cholera and plague, began to be made in the early 1920s. The period after 1951 to-date stands out as an era of rapid decline in mortality thanks to the efforts made in the five-year plans to improve the health and economic condition of the nation. Apart from emphasising agricultural development by increasing the area under irrigation and use of fertiliser, measures for the control of malaria, filariasis, tuberculosis, leprosy and venereal

diseases were launched under the five-year plans. Public health measures like spraying of DDT, sanitary programmes, improved water supply and wider use of anti-biotics helped bring down the death rate speedily.

The decline in mortality in recent years can also be evidenced from the falling trend in the proportion of women aged 40 and over who are widowed as seen in various census reports. Though these figures may be influenced to some extent by the fact that in recent years widow re-marriages are on the increase, the sharp decrease has to be attributed to a real decline in mortality.

TABLE 30 : PERCENTAGE OF WOMEN AGED 40 & OVER WHO ARE WIDOWED

Year	Widowed
1891	61.1
1901	59.3
1911	59.6
1921	58.6
1931	58.3
1941	55.2
1951	46.0
1961	45.1
1971	37 6

The 1951 figures relates to women aged 35 & above.
The 1971 figure estimated from the one per cent sample.

Expectation of life at birth. Despite the fact that very little research has gone on in India into the mortality conditions of different sections of the population, a series of life tables have been built up as ancillary to the decadal population census. Table 31 gives the expectation of life at birth for India since 1901.

TABLE 31 : EXPECTATION OF LIFE AT BIRTH

Year	Expectation of life at birth		
	Males	Females	Persons
1901-10	22.6	23.3	22.9
1911-20	19.4	20.9	20.1
1921-30	26.9	26.6	26.8
1931-40	32.1	31.4	31.8
1941-50	32.5	31.7	32.1
1951-60	41.9	40.6	41.3
1961-70	47.1	45.6	46.4

Figures for 1961-70 are based on one per cent sample & are provisional.
Source : Actuarial reports—Census of India.

Differences in the methods of smoothing of census age data and construction of life tables may well have influenced these values. Even so, the general upward trend from 1901 to 1971 is unmistakable.

While there is evidence that mortality has been declining continuously, no indication as to the level of mortality is obtained from the registered figures. Table 32 gives the death rates as estimated by SRS for recent years. These rates suffer from under-enumeration. Yet these are the best available estimates to-date.

TABLE 32 : DEATH RATES FROM SRS (1968—72)

Year	Rural	Urban	Total
1968	16.8	n.a	n.a
1969	19.1	11.4	17.6
1970	17.3	10.2	15.7
1971	16.4	9.7	14.9
1972	18.9	10.2	16.9

Source : Sample Registration bulletin vol. VII, no. 3.

As with birth rate, death rates also differ from area to area. Table 33 relating to 1941-60 brings out the differentials between zones.

TABLE 33 : ESTIMATED DEATH RATES BY ZONES

Zone	1941—50	1951—60
North	27.2	19.0
East	28.2	23.9
South	21.8	22.3
West	24.9	21.4
Central	34.7	24.4

Source : Actuarial reports—Census of India.

Death rates estimated from SRS for recent years are presented in table 34. The death rate is below average in southern states of Andhra Pradesh,

TABLE 34: ESTIMATED (SRS) DEATH RATES BY STATES (1968—72)

		1968		1969		1970		1971		1972	
		R	U	R	U	R	U	R	U	R	U
	STATES										
1.	Andhra Pradesh	15.8	—	17.2	—	16.9	11.4	15.8	9.1	17.0	11.6
2.	Assam	20.0	—	17.4	10.6	16.8	10.2	18.7	9.5	18.4	9.7
3.	Bihar	14.9	—	—	10.2	—	9.8	14.6	9.4	19.0	9.7
4.	Gujarat	17.7	—	20.7	—	18.7	13.7	17.6	13.0	16.4	11.0
5.	Haryana	11.7	—	10.0	—	10 4	6.5	10.4	7.3	12.3	8.8
6.	Himachal Pradesh	—	—	—	—	16.2	7.5	16.2	7.3	16.6	6.1
7.	Jammu & Kashmir	17.5	—	14.4	7.4	13.6	5.6	11.7	6.0	12.0	6.5
8.	Kerala	10.0	—	9.2	—	9.2	8.8	9.1	8.4	9.3	7.8
9.	Madhya Pradesh	—	—	—	—	17.5	10.6	16.6	9.7	19.9	11.3
10.	Maharashtra	13.9	—	15.5	—	13 0	9.8	13.5	9.7	14.5	9.0
11.	Manipur	—	—	7.4	4.7	8.7	5.2	7.1	5.5	10.7	7.8
12.	Mysore	13.3	—	15.4	9.5	14.2	10.3	14.0	7.2	14.3	8.7
13.	Nagaland	—	—	—	—	—	—	—	—	—	—
14.	Orissa	15.5	—	17.6	11.3	16 8	11.4	15.9	10.0	20.4	12.1
15.	Punjab	12 0	—	11.6	9.8	11.8	9.2	10.9	8.7	13.4	9.5
16.	Rajasthan	18 4	—	24.0	13.6	18.9	11.9	17.0	9.3	18.3	10.1
17.	Tamil Nadu	—	—	13 8	—	18.1	9.4	16.4	9.3	17.9	8.9
18.	Tripura	—	—	—	—	15.6	6.1	16.1	7 6	10.5	8 6
19.	Uttar Pradesh	23.5	—	25.6	14.4	22.7	13.7	21.1	13.1	27.1	14.8
20.	West Bengal	13.4	—	10.8	—	12 0	6.3	—	9.2	—	10.5
	UNION TERRITORIES										
1.	Andaman & Nicobar Islands	—	—	—	—	—	—	8.3	4.1	—	—
2.	Arunachal Pradesh	—	—	—	—	—	—	19.8	—	22.4	—
3.	Chandigarh	—	—	—	—	—	—	—	—	8.5	4.4
4.	Dadra & Nagar Haveli	—	—	—	—	—	—	15.1	—	16.4	—
5.	Delhi	17.7	7.5	16.1	8.0	12.3	7.4	11.8	7.2	12.3	7 4
6.	Goa, Daman & Diu	—	—	—	—	11.6	5.7	11.2	5.9	8.9	5.8
7.	Laccadive, Minicoy & Amindivi Islands	—	—	—	—	—	—	15.7	—	17.1	—
8.	Pondicherry	—	—	—	—	—	—	9.0	9.7	8.5	7.8
	India (Pooled estimates)	16.8	—	19.1	11.4	17 3	10.2	16.4	9.7	18.9	10.2

Kerala, Mysore and Maharashtra and the northern states of Punjab and Haryana. In the northern states of Gujarat, Bihar, Uttar Pradesh and Rajasthan, the mortality is seen to be above the national average.

Mortality differentials. Available data on mortality by rural-urban residence (table 34) indicate that mortality is lower in urban areas than in rural. Even though a part of this may be attributed to the age structure of the urban population with a preponderance of persons in the working age group among whom mortality is low, the difference seems real. Better sanitary conditions, availability of protected drinking water and medical facilities in urban areas may be the reason for the lower mortality rates. Thus on the eve of the fifth plan, while about 85 per cent of the urban population has piped water supply, about 61 million living in 116,000 villages do not have an elementary water supply system. Further the entire rural area, as well as most of the medium and smaller towns, are without proper sewerage. The available meagre medical facilities are concentrated in urban areas, where 80 per cent of the hospital beds and 20 per cent of the doctors in the country are to be found. No wonder mortality in rural areas is higer than in urban areas.

The age specific death rates estimated by SRS for rural areas show that mortality among females upto age 35 is higher as compared with males. The reverse is the picture after age 35. The mortality at younger ages, as expected, is high.

The sex specific rates indicate that on the whole females are more exposed to the risk of mortality than males. These conclusions are corroborated by the registered figures of death, even though these suffer from severe limitation such as incomplete coverage and sex selective registeration. According to these figures, there has been a sharp fall in the absolute number of death at all ages below 50 during the last 30 years. The total number of deaths in age group 20-29 is much higher for females than males, despite the adverse sex ratio of the population.

TABLE 35 : AGE SPECIFIC MORTALITY RATE FROM SRS (RURAL) 1968 AND 1969

Age group	Persons		Males		Females	
	1968	1969	1968	1969	1968	1969
0-4	62.8	64.1	59.1	58.3	66.8	70.2
5-9	5.9	6.6	5.5	5.8	6.3	7.4
10-14	2.4	2.9	2.3	3.0	2.6	2.7
5-14	4.3	4.9	4.0	4.5	4.6	5.3
15-19	2.6	3.1	2.0	2.1	3.3	4.2
20-24	3.9	4.7	2.7	3.9	5.1	5.5
25-29	5.1	4.6	3.2	3.7	6.9	5.5
30-34	4.9	5.2	3.8	4.1	6.0	6.4
35-39	6.2	6.3	6.2	6.5	6.1	6.1
40-44	7.8	8.1	7.7	8.5	7.9	7.6
45-49	11.0	11.4	12.7	13.2	9.2	9.4
15-49	5.4	5.7	4.8	5.3	6.0	6.1
50-54	15.4	17.5	16.9	18.7	13.7	16.2
55-59	20.3	24.4	22.4	28.3	17.9	20.2
60-64	35.1	41.4	39.8	44.0	30.2	38.7
65-69	52.3	56.2	52.2	59.9	52.3	52.2
70 +	112.8	122.2	113.9	123.0	111.6	119.5
TOTAL	18.2	19.1	17.5	18.2	19.0	20.1

Similarly in age group 30-39, female deaths are relatively higher than in other age groups. Table 36 giving the sex ratio at death by age groups for the decades 1940-49, 1950-59 and 1960-69 lends substance to the above conclusion.

TABLE 36 : SEX RATIO AT DEATH BY AGE GROUPS BASED ON REGISTRATION FIGURES

Age group	Sex ratio (Males/100 females) at death during the decade		
	1940-49	1950-59	1960-69
Less than 1	120	118	110
1- 4	107	108	95
5- 9	110	114	105
10-14	116	112	
15-19	92	96	83
20-29	83	86	
30-39	106	105	106
40-49	135	133	
50-59	130	135	132
60+	108	114	90
Total	111	113	101

Source : Vital statistics of India.

Infant mortality. In contrast to death at older ages, infant deaths, at least those taking place after one month of age, are more responsive to improvement in environmental conditions. In epidemic years it rises sharply; it declines in years when health conditions improve. The five-year infant mortality rates of India based on civil registration figures are given in table 37. The infant mortality was above 200 upto the year 1920 and after that it shows a slight decline. The decline is rapid after the 1950's. Though this picture, based on incomplete registration figures, may be open to question the fact remains that from a high level in the beginning of the century, the IMR has declined sharply.

TABLE 37 : INFANT MORTALITY RATE FOR REGISTRATION AREAS OF INDIA

Period	Rate per 1,000 (five-year average)
1900 1904	215
1905-1910	228
1911-1915	204
1916-1920	219
1921-1930	174
1931-1935	178
1936-1940	174
1941-1945	161
1946-1950	161
1951-1955	134
1956-1960	95
1961-1965	77
1966-1969	66

A more reliable indicator of the decline in infant mortality is given by the probability of death at age '0' used by census actuaries from time to time and presented in table 38. These too point to a rapid decline during the last 30 years.

TABLE 38 : PROBABILITY OF DEATH AT AGE '0'

Decade	Males	Females
1872-1881	184.1	242.6
1881-1891	272.6	239.9
1891-1901	285.4	258.8
1901-1911	290.0	284.5
1911-1921	n.a.	n.a.
1921-1931	248.7	232.3
1931-1941	n.a.	n.a.
19 1-1951	190.0	175.0
1951-1961	153.0	138.0
1961-1971	135.0	130.0

Source : Actuarial reports — Census of India.

The sample registration system has estimated IMR as 137, 140, 133 and 131 in rural areas for the years 1968, 1969, 1970 and 1971 respectively. In urban areas the corresponding values were 86 and 81 for the year 1970 and 1971.

Infant deaths may be divided into those occuring within a month of birth and those occuring after a month. While the latter are responsive to improvements in environment and other public health measures, the former are mostly caused by congenital defects and are therefore difficult to control. The neo-natal mortality rate is quite high in India. Analysis of SRS rural data for 1968 and 1969 show that deaths during the first month accounted for 74 and 75 per 1,000 live births as against a post-natal mortality rate of 63 and 65 per 1,000 live births. With about 45 per cent of the deaths occuring to children aged above one month, there appears to be sufficient justification to believe that future improvements in public health measures are likely to have an impact on IMR.

Diseases and deaths. The available data on cause of death suffer from erroneous classification, in addition to under reporting. In the absence of any other evidence, these are made use of to discuss the trends.

In India causes of deaths are classified into the following eight categories : (i) cholera (ii) plague (iii) smallpox (iv) fevers (v) dysentery & diarrohea (vi) respiratory diseases (vii) injuries and (viii) other causes. Of these only cholera, plague and smallpox are notifiable diseases throughout the country and information is available on these for a long time. In recent years, data on some other communicable diseases like malaria and tuberculosis are also available as these diseases have been brought under the national control/eradication programmes. Table 39 giving the number of deaths due to plague, cholera and smallpox during the various periods reveals that these diseases have been controlled to a great extent.

The most impressive gains have been made in the control of plague. In post-independent India, the number of plague victims has fallen sharply. No

TABLE 39 : REGISTERED DEATHS DUE TO PLAGUE, CHOLERA & SMALLPOX IN INDIA

Period	Plague	Cholera	Smallpox
1898-1908	6,032,693	3,879,735	853,254
1909-1918	4,221,529	3,474,074	745,801
1919-1928	1,762,718	2,567,543	803,859
1929-1938	422,580	1,731,899	717,030
1939-1948	268,596	2,051,808	722,260
1949-1958	59,059	516,065	643,786
1959-1968	1,380	147,979	415,838

(Cholera and smallpox figures in the first line relate to period 1900–1908 only.)

Sources : Statistical review of cholera problem in India. Statistical review of small pox problem in India. Pattern of mortality in India. (Published by the Central bureau of health intelligence, New Delhi).

less impressive is the control of cholera. This, however, is much easier to control than smallpox or plague if it is notified immediately and preventive measures are undertaken. There are still areas where cholera is endemic. Its permanent eradication is possible only when environmental sanitation improves considerably.

Smallpox is a diseases which is spread over the country. Unlike cholera, prevention is much easier and less costly in the case of smallpox. Vaccination is effective for a long period. Despite these advantages, smallpox has not been wiped out completely. Against a target of 179 million primary vaccinations and 502 million re-vaccinations, 121 million primary vaccinations and 348 million re-vaccinations were carried out during the fourth plan (1969-74). Inspite of these efforts, smallpox whose incidence was on the decline from 1968 to 1970 has been showing a rising trend after that. Further augmentation and strengthening of the surveillance component of the programme is proposed in the fifth plan (1974-79).

Diseases like malaria, tuberculosis, filariasis and leprosy continue to prevail. Emphasis has been laid on the eradication of malaria under the 1953 national malaria control programme. The child spleen rate (the percentage of the sample population who are found to have enlarged spleen, an external symptom of malaria) has declined from 15.7 in 1953-54 to 0.7 in 1970-71. Yet another indication of the decline is the reduction in the case rate (percentage of malaria cases to total cases of all diseases) of malaria.

TABLE 40 : PROPORTIONATE CASE RATE OF MALARIA

1953-54	10.8
1963-64	0.28
1964-65	0.10
1965-66	0.05
1966-67	0.04
1967-68	0.07
1968-69	0.16
1969-70	0.07
1970-71	0.15 (provisional)

Source : Pattern of morbidity & mortality in India (Issued by C.B.H.I.).

Despite improvement in the 1960's compared to the 1950's, the proportionate case rate shows an increasing trend in the latter half of the 1960's. In fact there have been local outbreaks since 1964 resulting in some setbacks. Persistent transmission has been noticed in Gujarat, Madhya Pradesh and Rajasthan. Delay in supply of insecticides and other anti-malaria drugs and the development of resistance to DDT by the vector mosquitoes have been mentioned as reasons for the setback. Contrary to the earlier optimism, a recent evaluation has indicated that eradication is possible only for 91 per cent of the population and the remaining 9 per cent will continue to be in the attack phase.

With the control of malaria within reasonable limits, the most important cause of death in India seems to be tuberculosis. In the absence of proper diag-

nosis and registration, the exact number suffering from tuberculosis and the number dying are difficult to estimate. A majority of deaths occuring from TB are perhaps registered under the category of respiratory diseases. For example, under the model registration schemes of the Registrar General, various diseases such as broncho-pneumonia, bronchitis, influenza and TB of the respiratory system together account for 25 per cent of the total deaths during a year. A sample survey of tuberculosis conducted by the Indian Council of Medical Research in 1955-58 revealed that nearly 1.8 per cent of the population was suffering from active pulmonary TB and nearly one-fourth of these cases were infectious. Hospital records also confirm that TB claims a high percentage of indoor deaths. Lack of immunity and the low level of living with a concomittant suceptibility to the disease have been mentioned as reasons for the spread of the disease in rural areas also. An important factor that hampers control is that institutional treatment for TB is prolonged and costly. The strategy under the TB control programme has been to detect active cases in an early stage and to protect healthy persons under age 20 by BCG inoculation. Upto 1971, about 250 million persons have been tuberculin-tested and about 142 million BCG-vaccinated. There are 547 TB clinics in the country and nearly 36,500 TB beds have been provided so far. Through a better standard of living and immunisation by BCG, the onslaught of the disease may be controlled in the not too distant a future.

About 3.1 million people are estimated to be suffering from leprosy, of whom about one-fourth are of the infectious type. Excepting Punjab, Chandigarh, Delhi and the Andamans, the disease is more or less endemic in the rest of India. Nearly half of the total leprosy cases in India are found in Tamil Nadu and Andhra Pradesh. The disease is also highly prevalent in Bihar, Kerala and Orissa. Under the 1955 leprosy control programme, about 96 million people have been covered. A large number are still exposed to the risk of contracting the disease. During the fifth plan (1974-79), it has been proposed to cover

the entire hyper-endemic and moderately endemic area with a population of 276 million.

Other diseases like measles, meningitis, typhoid and diphtheria take a heavy toll. According to the model registration scheme of the Registrar General, infant deaths due to malformation or congenital debility, pre-maternity birth injuries and other early infections account for nearly 10 per cent of the total deaths. Control of these diseases would require medical attendance which is sadly lacking in most of the rural areas and is inadequate in urban areas. Appreciable reduction in mortality, therefore, seems to be a challenging task, considering the available resources.

3. COMPOSITION OF POPULATION

Fertility and mortality rates discussed earlier are factors underlying the dynamics of population. This chapter discusses the characteristics of sex/age distribution, marital status, language, religion, etc. Unlike studies on fertility and mortality, information on population composition depends entirely on census data.

SEX RATIO

The sex ratio of the Indian population, defined as the number of females per 1,000 males, has always been adverse to females. There were only 972 females per 1,000 males in 1901.

TABLE 41 : SEX RATIO (FEMALES/1,000 MALES) (1901-71)

Census year	Sex ratio
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930

Source : "Pocket book of population statistics"—Census Centenary 1972.

The paucity of females has widened over the years culminating in a ratio of 930 females per 1,000 males in 1971. Starting on the *a priori* consideration that the sex ratio of a closed population should normally be nearer to 1,000, a number of plausible reasons for the imbalance in the sex ratio of the Indian popu-

lation suggest themselves :

(a) relatively larger extent of omission of females in Indian censuses ;

(b) more adverse mortality conditions for females compared to males ;

(c) emigration out side the country; and

(d) a sex ratio at birth grossly favourable to males.

Under-enumeration. Indian censuses suffer from a net under-enumeration of the population. Considering the status of women in the social hierarchy of the country, an explanation often given is that the imbalance in the sex ratio is probably because of greater omission of females compared with males in the censuses. Though this may account for some of the difference, an examination of the results of the post-enumeration surveys conducted along with recent censuses indicates that the differential is not substantial enough to explain away all of the differences.

TABLE 42 : PERCENTAGE UNDER-COUNT BY SEXES

Census year	Males	Females
1951	0.86	1.12
1971	1.53	1.83

Note : Though a PEC was taken in 1961, the results are not available sex-wise.

Out-migration. Statistics on international migration are extremely scanty. The available record of emigration outside India during 1923-47 indicates a preponderance of males (2105 males per 1,000 females). Most of the emigration in the early part of the 20th century was of short duration composed of indentured labour under which the emigrating males left behind their females under labour contract. In the post-independence period, there has been no international migration worth speaking of, except that to and from Pakistan. According to the 1951 census, the number of refugees were 7.3 million comprising 3.9 million males and 3.4 million females. During the 1961 census persons born in Pakistan and enumerated in India were 4.5 million males and 3.8 million females. It has been

estimated that after allowing for mortality, net immigration into India was 0.678 million males and 0.688 million females during 1951-61. This is not only insignificant compared with the population of the country as a whole, but the differential is too slender to account for the differential in the sex ratio.

Sex ratio at birth. It is generally maintained that the sex ratio at birth is a 'biological constant' which varies only in an interval of 935-960. Available data from surveys conducted in different parts of India at different times do not show any drastic variation from this level. It has been reported in the couple fertility study based on the NSS 2nd and 4th rounds that for the most recent marriage cohorts married during 1930 and after, the sex ratio was 935. Though the authors have reported high sex ratios at birth for the earlier marriage cohorts, they indicate that the figures may have been affected to a varying extent by the smallness of sample size and recall lapse. The SRS provides the sex ratio at birth for India and the states for the two years 1968 and 1969.

TABLE 43 : SEX RATIO AT BIRTH IN VARIOUS STATES—SRS RURAL, (1968 & 1969)

State	Sex ratio at birth (females per 1,000 males)	
	1968	1969
1. Andhra Pradesh	1002	963
2. Assam	938	966
3. Gujarat	923	950
4. Haryana	861	883
5. Jammu & Kashmir	926	827
6. Kerala	947	948
7. Maharashtra	910	907
8. Mysore	897	937
9. Punjab	870	892
10. Rajasthan	896	867
11. Tamil Nadu	n.a.	960
12. Uttar Pradesh	912	915
Pooled	923	928

Source : "Sex composition in India," SRS Analytical series no. 4, 1972.

With a sex ratio at birth which is not too distorted, we cannot expect it to account for the drastic disparity in the sex ratio of the population at large.

Differential mortality. With all the other factors of differential under-enumeration, adverse sex ratio at birth and international immigration of males being of no consequence, the most important factor left which could contribute to the imbalance in the sex ratio of the population can only be the sex differential in mortality. It has been observed recently from SRS data that the risk of dying is more in the case of females at all ages up to 35. Table 44 summarises the sex ratio at death by age groups observed in the rural parts of India in 1968 and 1969.

TABLE 44 : SEX RATIO OF DEATHS BY AGE AT DEATH—SRS RURAL (1968 & 1969)

Year	All ages	Age group						
		0—4	5—14	15—24	25—34	35—44	45—54	55+
1968	1015	1055	1043	1716	1862	923	682	873
1969	1039	1132	1079	1629	1543	833	710	862

Source : "Sex composition in India", SRS Analytical series no. 4, 1972.

These figures show that female mortality is appreciable in all the age groups upto 35 years of age. The differential is particularly critical in the younger reproductive age 15-34. The sex ratio among deaths turns in favour of females only in ages beyond 35. A comparison of mortality rates from the life tables of the previous censuses also shows that female mortality has been higher in childhood and early adult ages, particularly in the last few decades. To sum up, under the present data situation the only factor that can account for the adverse sex ratio seems to be a higher female mortality. In the social order obtaining today, there is a premium placed on males and this results in a neglect of females after birth. The natural resilience of females to mortality can be observed only in the advanced ages. While in most of the Asian countries the sex ratio is unfavourable to females, almost all the advanced countries present a contrary picture.

MARITAL STATUS

The social and cultural milieu of India had long favoured universality of marriage and an early marriage of women. Among the Hindus who form more than 80 per cent of the population the primary role of women has along remained that of a mother and every man was ordained to marry in order that his family was perpetuated through a son. Even among other communities like Muslims, Christians and Sikhs, the practice of universal and early marriage is prevalent in the country.

Table 45 gives the percentage distribution of population aged 10 and above by marital status according to the 1961 and 1971 censuses.

TABLE 45 : PERCENTAGE DISTRIBUTION OF POPULATION AGED 10 YEARS AND ABOVE BY MARITAL STATUS (1961 & 1971)

Marital Status	Year	Rural		Urban		Total	
		Males	Females	Males	Females	Males	Females
Never married	1961	31.9	15.8	39.5	24.2	33.4	17.2
	1971	35.1	20.2	43.0	29.2	36.8	22.0
Married	1961	61.8	67.5	56.4	61.1	60.7	66.5
	1971	59.9	66.3	53.8	59.3	56.5	64.9
Widowed	1961	5.6	15.8	3.7	14.0	5.2	15.5
	1971	4.6	12.9	2.7	11.0	4.2	12.5
Divorced/ separated	1961	0.6	0.8	0.3	0.6	0.6	0.7
	1971	0.3	0.5	0.2	0.4	0.3	0.5
Unspecified status	1961	0.1	0.1	0.1	0.1	0.1	0.1
	1971	0.1	0.1	0.3	0.1	0.2	0.1

Note : 1971 data based on one per cent sample.

The greater proportion of never married males compared to never-married females is striking. The greater proportion of widows compared to widowers points towards the tendency for more men to remarry than women. This pattern is seen both in rural and urban areas. This differential is too wide to be explained

away by the fact that men marry at least five years later than women on the average. When the absolute number of persons married is taken into account, it is found that more females (120 million) are married than males (117 million), which is probably indicative of the prevalence of polygamy in some sections of the population.

The proportion of never married is greater while of those married and widowed is less in urban areas than in rural areas. This differential may to some extent be due to migration to urban areas of the never-married in search of jobs and also the higher age at marriage of the urban residents compared with that of the rural population.

The increase in the proportion of never married in 1971 compared with 1961 and the lower proportion married in the period may be noticed. It is indicative of the incipient social change in the Indian population with widening educational and economic opportunities becoming available to the women. The decrease in the proportion widowed is largely due to improvement in mortality during the decade and possibly due to a liberalised outlook to widow re-marriage.

Table 46 gives the percentage distribution of population by age, sex, marital status and residence for 1961 and 1971 repectively. It brings out the universality of marriage in the Indian population. The proportion married has gone down considerably in the younger ages 10-19 for females and 10-24 for males with the concomitant increase in the proportion never married both in rural and urban areas. There has, therefore, been an increase in the age at marriage during the last decade; this can also be seen by direct computation of the mean age at marriage presented subsequently. In respect of widowhood, there is a progressive decline in the proportion widowed among both males and females at every age, regardless of residence. The greater proportion of widowed females compared with widowed males at every age implies that even now a greater proportion of widowers tend to remarry compared with widows. The differences in

TABLE 46 : PERCENTAGE DISTRIBUTION OF POPULATION BY AGE, SEX, MARITAL STATUS AND RESIDENCE (1961 & 1971)

Age group	Rural & Urban	Never married				Married				Widowed				Divorced & separated			
		1961		1971		1961		1971		1961		1971		1961		1971	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
10—14	Rural	92.1	77.7	94.8	86.3	7.7	22.0	5.2	13.6	0.1	0.2	—	0.1	0.1	0.1	—	—
	Urban	98.1	93.1	98 8	96.1	1.9	6.8	1.2	3.9	0.0	0.1	—	—	0.0	0.0	—	—
15—19	Rural	72.9	25.0	78.9	36.9	26.5	73.7	20.8	62.3	0.3	0.6	0.2	0.4	0.3	0.7	0.1	0.4
	Urban	88.6	47.7	92.9	64.0	11.2	51.6	7.0	35.6	0.1	0.3	0.1	0.2	0.1	0.4	—	0.2
20—24	Rural	39.3	4.5	44.1	6.2	59.0	93.2	54.9	92.1	1.0	1.4	0.7	1.0	0.7	0.9	0.3	0.7
	Urban	59.0	12.7	67.6	19.1	40.2	85.6	32.0	79.8	0.5	1.0	0.3	0.7	0.3	0.7	0.1	0.4
25—29	Rural	15.5	1.5	15.8	1.3	81.7	94.5	82.3	96.1	1.8	3.0	1.4	1.9	1.0	1.0	0.5	0.7
	Urban	26.3	3.9	28.7	4.5	72.2	92.8	70.4	93.5	1.1	2.5	0.7	1.5	0.4	0.8	0.2	0.5
30—34	Rural	7.0	0.8	6.4	0.6	89.2	91.5	90.7	94.6	2.8	6.6	2.4	4.1	1.0	1.1	0.5	0.7
	Urban	10.6	2.1	10.0	1.9	87.1	91.2	88.5	94.1	1.9	5.8	1.3	3.5	0.4	0.9	0.2	0.5
35—39	Rural	4.4	0.6	3.7	0.4	90.2	87.0	92.7	91.7	4.6	11.3	3.1	7.2	0.8	1.1	0.5	0.7
	Urban	5.3	1.4	5.2	1.1	91.6	87.2	92.9	92.1	2.6	10.4	1.6	6.2	0.5	1.0	0.3	0.6
40—44	Rural	3.9	0.5	3.4	0.5	88.9	77.8	91.1	84.5	6.4	20.7	5.0	14.3	0.8	1.0	0.5	0.7
	Urban	4.1	1.2	4.0	1.0	91.1	77.2	92.9	85.0	4.4	20.6	2.9	13.5	0.4	1.0	0.2	0.5
45—49	Rural	3.3	0.4	2.8	0.3	87.3	70.0	90.3	78.7	8.7	28.7	6.5	20.3	0.7	0.9	0.4	0.7
	Urban	3.4	0.9	3.1	0.9	89.8	68.5	92.7	72.8	6.4	29.7	4.0	20.9	0.4	0.9	0.2	0.4
50—54	Rural	3.2	0.4	2.8	0.4	83.2	53.5	86.4	62.8	12.9	45.3	10.4	36.3	0.7	0.8	0.4	0.5
	Urban	3.2	0.9	3.0	0.8	86.3	51.8	90.0	61.0	10.1	46.6	6.7	37.7	0.4	0.7	0.3	0.5
55—59	Rural	3.0	0.4	2.5	0.3	80.4	49.1	84.6	58.8	16.0	49.8	12.5	40.5	0.6	0.7	0.4	0.4
	Urban	2.8	0.9	2.8	0.6	83.5	45.7	87.9	55.2	13.2	52.8	9.1	43.7	0.5	0.6	0.2	0.5
60—64	Rural	2.9	0.3	2.6	0.3	74.2	29.7	79.0	37.1	22.3	69.5	18.1	62.2	0.6	0.5	0.3	0 4
	Urban	2.6	0.8	2.8	0.6	77.4	27.9	82.2	34.9	19.6	70.9	14.7	61.1	0.4	0.4	0.3	0.4
65—69	Rural	2.9	0.3	2.4	0.4	70.2	27.5	76.3	35.1	26.3	71.7	21.0	64.2	0.6	0.5	0.3	0.3
	Urban	2.7	0.8	3.2	0.7	73.2	25.2	79 8	32.6	23.6	73.6	16.8	66.4	0.5	0.4	0.2	0.3
70 +	Rural	2.9	0.3	2 7	0.5	60.1	15.1	66.5	19.8	36.4	84.2	30.5	79.5	0.6	0 4	0.3	0.2
	Urban	2.6	0.9	2.8	0.9	62.4	13.1	69.8	18.4	34.5	85.7	27.0	80.4	0.5	0.3	0.4	0.3
Total	Rural	52.4	41.5	54.7	44.3	43.3	47.0	41.9	46.3	3.9	11.0	3.2	9.0	0.4	0.5	0.2	0.4
	Urban	55.2	46.4	57.6	48.9	41.8	43.3	40.3	42.9	2 8	9.9	2.0	8.0	0.2	0.4	0.1	0.2

Note : The total includes age group 0—9.

percentages are much greater than what may be expected on the basis of the sex ratio in the population. The greater proportion of married males and females in the reproductive age group 15-44, which is the direct effect of improving mortality conditions, is a factor to be reckoned with in the promotion of family planning.

Age at marriage. This is a crucial variable which influences the fertility pattern of a population. India is a country in which marriage, apart from being universal, is also contracted early in life. Though there is no mechanism to register all marriages in the country, the progressive improvement in age at marriage can be seen from the census data as well as from demographic surveys.

Table 47 shows the proportion of population in age group 0-14 as against those who are married or never married. It brings out the prevalence of early marriage among women which has progressively declined over time. Upto 1941, the proportion never married is less than the proportion of children aged 0-14 for females, suggesting the prevalence of marriages of females less than 14 years. Subsequent to 1941, this pattern is reversed which implies a progressive reduction in early marriages.

TABLE 47 : NUMBER PER 1,000 OF FEMALE POPULATION IN AGE GROUP 0-14 AND NUMBER PER 1,000 WHO ARE UNMARRIED, MARRIED OR WIDOWED FOR EACH SEX

Census	0-14	Never married	Married	Widowed/ divorced
1971	418	452	456	92
1961	412	423	463	113
1951	379	388	484	128
1941	384	369	480	151
1931	400	346	499	155
1921	390	358	467	175
1911	381	344	483	173
1901	380	344	476	180
1891	387	339	485	176
1881	381	323	490	187

Source : D. Natarajan, "Age & marital status." Census centenary monograph no. 8.

Rural-urban differentials. Table 48 shows that urban females marry at higher ages than those in rural areas.

TABLE 48 : AGE AT MARRIAGE FROM VARIOUS NSS STUDIES

Round	Year	Males		Females	
		Rural	Urban	Rural	Urban
II	(a) April—June 1951	19.6	—	14.2	—
IV	(b) April—Sept. 1952	20.2	23.0	14.6	16.4
VII	(c) Oct. '53—March '54	18.9	23.4	14.2	15.6
XVI	(d) July '60—Aug. '61	—	22.6	—	16.9
XVII	(e) Sept. '61—July '62	21.7	22.8	15.9	15.9

Note : (a) Relates to Hindu couples married after 1930. (b) The figures relate to mean age at marriage of the 1946-51 marriage cohort. (c) Median age at marriage. (d) Age at effective marriage.

Similar findings have also been noted in a study conducted during 1958 in Central India where the mean age at marriage for females was 15.5, 13.6 and 13.4 years for those living in cities, towns and villages respectively. According to the Mysore population study, such differentials existed between those living in Bangalore city and in the rural plains of Mysore. According to the 1961 census, the age at marriage in urban areas was higher by 2 to 3 years for both males and females. This difference was also observed in various states. A part of this difference may be due to the differential in the marital status of migrants coming to urban areas. Though the rural-urban differential is present in age at marriage, if effective marriage is considered, there does not seem to be any difference between rural and urban as revealed by NSS data from the 17th round shown in table 49.

Though it has been observed earlier that rural-urban differentials are present in all the states, the variation in age at marriage in different parts of India is significant. The age at marrige has been generally higher in the southern, eastern and north-western zones for both males and females while the central and

TABLE 49 : AVERAGE AGE AT EFFECTIVE MARRIAGE OF WIFE IN RURAL AND URBAN AREAS

	State	Rural	Urban
1.	Andhra Pradesh	15.16	15.00
2.	Assam	16.59	17.04
3.	Bihar	15.84	15.70
4.	Gujarat	16.80	16.67
5.	Jammu & Kashmir	15.84	15.93
6.	Kerala	17 63	17.62
7.	Madhya Pradesh	15.53	15.64
8.	Maharashtra	15.38	15.93
9.	Mysore	15.06	15.24
10.	Orissa	16 09	15.91
11.	Punjab	16.73	16.56
12.	Rajasthan	15.71	15.07
13.	Tamil Nadu	16.84	16.19
14.	Uttar Pradesh	16.04	16.01
15.	West Bengal	14.48	15.22
	INDIA	15.86	15.88

Source : NSS 17th round, Report no. 154.

northern zones exhibit the lowest age at marriage. It has been calculated from census data that the range between the highest and lowest age at marriage is about 6.7 years for females and 6.2 years for males.

Education and age at marriage. A higher educational level of the wife means a higher age at effective marriage in rural and urban areas of all the states according to table 50 giving the data collected for the NSS 17th round during 1961-62. Local studies like the Central India survey and the Mysore population study corroborate the above finding. In the former study, the median age at marriage was estimated to be 13.4, 15.8 and 18.4 years respectively for the uneducated, educated upto primary level and educated above primary level respectively.

TABLE 50 : AVERAGE AGE AT EFFECTIVE MARRIAGE OF WIFE AND EDUCATIONAL STANDARD OF WIFE

	Illiterate		Below primary		Primary		Middle		Secondary		Graduate & above	
	R	U	R	U	R	U	R	U	R	U	R	U
1. Andhra Pradesh	15.25	14.93	15.03	15.01	15.23	15.27	15.33	16.76	18.20	18.67	13.93	21.94
2. Assam	16.78	18.10	16.94	17.31	16.25	16.69	17.89	18.24	18.50	18.85	28.00	22.29
3. Bihar	15.85	15.63	16.62	15.75	16.03	15.82	15.60	16.12	—	18.25	—	18.30
4. Gujarat	16.89	16.65	17.04	17.06	16.92	17.12	16.71	18.39	20.00	18.96	—	21.22
5. Jammu & Kashmir	16.01	16.21	14.69	46.25	15.59	16.16	14.44	16.98	20.00	18.46	—	20.90
6. Kerala	17.68	17.61	18.68	16.81	18.16	18.87	18.28	18.81	20.06	21.59	—	21.96
7. Madhya Pradesh	15.81	15.48	15.64	16.16	16.50	16.80	17.82	17.38	—	18.71	—	19.09
8. Maharashtra	15.56	15.76	15.10	16.02	15.88	16.64	17.19	17.99	—	20.35	16.00	23.93
9. Mysore	15.13	15.26	16.25	16.12	16.53	15.51	18.50	16.69	18.00	18.95	—	18.29
10. Orissa	16.32	16.14	16.17	15.67	15.80	16.60	14.00	17.17	—	16.29	—	25.00
11. Punjab	16.80	16.43	17.67	17.09	18.15	16.48	18.00	17.79	18.84	19.09	—	21.10
12. Rajasthan	15.65	14.95	14.94	15.31	17.71	15.57	—	16.67	—	17.47	—	22.57
13. Tamil Nadu	16.90	16.40	17.81	16.39	16.90	16.78	17.94	18.12	19.69	19.92	—	22.67
14. Uttar Pradesh	16.22	16.08	17.73	16.19	15.20	16.46	16.65	16.89	10.00	18.27	20.00	20.65
15. West Bengal	14.66	14.87	15.18	15.88	15.12	16.36	17.46	17.41	15.00	19.27	—	22.46
ALL INDIA	15.94	15.79	16.85	16.13	16.75	16.59	17.35	17.54	18.47	19.37	17.73	21.52

Source : NSS 17th round. Report no. 154.

In the Mysore study, women who had only primary school education were found to be married about one year earlier than women with middle school education. A much larger difference of about four years was found between women with middle school education and those who had gone to high school in Bangalore city. The Mysore study shows that while education is an important factor in raising the age at marriage, not all the difference can be attributed to education alone. When median age at marriage was compared by birth cohort for woman at the same educational level as shown in table 51, an increasing trend was observed at all educational levels. For women with high school or higher education whose age at marriage was already high, the improvement was only marginal. In the case of males, however, there was difference in the median age at marriage by various levels of education.

TABLE 51 : MEDIAN AGE AT MARRIAGE BY EDUCATIONAL LEVEL, FOR COHORTS OF WOMEN IN BANGALORE CITY AND TOWNS

Zone & educational level	Years of birth of cohort				
	1888-1897	1898-1907	1908-1917	1918-1927	1928-1932
Median age at marriage (years)					
Bangalore city					
All classes	14.3	14.4	15.1	15.4	15.8
None or primary school :					
Illiterate	14.4	14.5	15.0	15.1	15.4
Literate	14.4	14.5	14.6	15.5	15.8
Middle school	17.2	15.1	16.1	16.2	16.8
High school	—	19.4	20.0	20.0	20.0
Towns					
All classes	13.6	14.5	14.7	15.2	15.5

TABLE 51 : MEDIAN AGE AT MARRIAGE BY EDUCATIONAL LEVEL, FOR COHORTS OF WOMEN IN BANGALORE CITY AND TOWNS—Concld.

Zone & educational level	Years of birth of cohort				
	1888-1897	1898-1907	1908-1917	1918-1927	1928-1932
None or primary school :					
Illiterate	13.5	14.5	14.5	15.2	15.2
Literate	—	14.4	14.9	14.5	15.0
Middle school	—	—	15.2	15.9	16.0
Number of women in sample					
Bangalore city					
All classes	597	918	1,117	1,742	1,278
None or primary school :					
Illiterate	455	604	667	979	633
Literate	63	157	217	313	220
Middle school	47	97	166	289	241
High school	24	48	53	113	124
Towns					
All classes	123	240	296	387	285
None or primary school :					
Illiterate	104	189	197	248	156
Literate	16	35	53	78	58
Middle school	3	13	39	51	60

Note : Values for all classes of Bangalore city obtained by weighting the data for the five strata. Those for educational groups obtained by pooling the unweighted data for the five strata. Median is not shown in some cases because of small number in the sample.

Source : The Mysore population study. UNO. ST/SOA/Series A/34.

Mean age at marriage. Data on marital status cross-classified by age available from the censuses have facilitated the calculation of the mean age at marriage (Table 52).

TABLE 52 : MEAN AGE AT MARRIAGE FOR MALES AND FEMALES AS COMPUTED FROM CENSUSES (1891-1971)

Year	Males	Females
1891	19.6	12.5
1901	20.0	13.1
1911	20.3	13.2
1921	20.7	13.7
1931	18.6	12.7
1941	19.9	14.7
1951	19.9	15.6
1961	21.3	15.5
1971	22.7	17.2

Note : The 1971 figures are calculated from the one per cent sample data (census) and are provisional.

Source : S.N. Agarwala, India's population problems.

The age at marriage had remained almost unchanged till 1931 and then has increased very gradually by about four years upto 1971, both for males and females. Till 1931 there was no minimum age for marriage prescribed by the law. The Child Marriage Restraint Act, providing penalties for solemnising marriages of females under 14 years of age and males under 18, came into force in April 1930. The slight lowering of the mean age at marriage to 12.7 in 1931 from 13.7 in 1921 brings out the fact that a large number of child marriages seem to have taken place before the act came into force. Table 53 shows that the proportion married

among 1,000 persons aged 0-15, which was steadily decreasing from 1881 to 1921, suddenly registered an increase in 1931.

TABLE 53 : NUMBER OF PERSONS MARRIED AMONG THOUSAND PERSONS, AGES 0-5.

Year	Males	Females
1881	63	187
1891	59	170
1901	59	162
1911	54	156
1921	51	144
1931	77	181
1941	n.a.	n.a.
1951	42	95
1961	19	51
1971	13	34

Source : D. Natarajan, Age and marital status—Census centenary monograph no. 8. The figures for 1951, 1961 and 1971 are calculated from census reports and relate to age group 0-14.

Whereas the difference between the mean ages of males and females remained about seven years upto 1931, it came down to an average of five years subsequently. An increase of nearly two years in the female age at marriage during 1961-1971 is indeed striking and is indicative of the general consciousness of the need for postponement of marriages. The data for the 1971 census are based on the one per cent sample and are provisional.

AGE COMPOSITION

Particulars of age last birthday have always been collected in the Indian censuses. Ignorance of age in a large section of the population has always vitiated the accuracy of the age returned in the census. The single year age data when

plotted on a graph therefore show the familiar concentrations and depressions at regular intervals which are attributable to age distortions due to preference for particular digits and ages. During the last fifty years or so, India's population has grown steadily without being affected on any large scale by events like wars, pestilence, famine or international migration. Even the family planning programmes which were initiated early in 1951 could not have had any tangible impact on the age structure till very recently. Though the age distribution of areas like state and district may be affected by internal migration to a progressively increasing extent, for the country as a whole, the distortions that one finds in the age returns are attributable mainly to mis-statements of age. One other factor that influences the zig-zag age curve is the differential under-enumeration at various ages. The results of the post-enumeration check show that except in the younger ages the pattern of under-enumeration is more or less uniform in the higher ages. However, when the data are assembled in broad age groups, the age structure of a young population with a flat base tapering off rapidly in the higher ages emerges clearly. A persistently high level of fertility has resulted in a population which has maintained a relatively constant age distribution from one census to the other. Nearly 40 per cent of India's population is below the age of 15 and only 3 per cent above age 65. These percentages have changed little over the decades.

TABLE 54 : PERCENTAGE DISTRIBUTION OF POPULATION IN EACH SEX BY BROAD AGE GROUPS (1911-1971)

Age group	1911		1921		1931		1941		1951		1961		1971	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
0—14	38.8	38.1	39.4	39.0	40.0	40.1	38.1	38.4	37.1	37.9	40.9	41.2	41.9	41.9
15—44	46.5	46.9	45.5	46.0	46.2	46.4	46.1	46.1	46.3	45.7	43.0	43.3	41.5	42.4
45—59	9.9	9.4	10.1	9.5	9.9	9.4	10.9	10.6	11.1	10.6	10.6	9.7	10.7	9.7
60—64	2.6	3.1	2.6	3.0	1.8	1.9	2.0	2.0	2.1	2.1	2.5	2.6	2.6	2.6
65+	2.2	2.5	2.4	2.5	2.1	2.2	2.9	2.9	3.4	3.7	3.0	3.2	3.3	3.4

* The 1971 figures are from the one per cent sample advance tabulation and are provisional.

This structure of the age pyramid has resulted in an adverse dependency ratio for India. For example, though the population of the U.S.A. as of April 1970 was only 203 million compared to India's 548 million as of April 1971, the number of children aged 0-9 in India is 160 million compared with 37 million in the U.S.A. But the number of persons aged 70 and over in both the countries is of the same order (13 million in the U.S.A. and 11 million in India). Thus India suffers from a heavy burden of dependency particularly at young ages. The present age structure thus favours a very rapid population growth.

EDUCATION AND LANGUAGE

Table 55 shows the number of literates per 1,000 population of each sex from the various censuses since 1881.

TABLE 55: LITERACY RATE PER THOUSAND IN INDIA BY SEX (1881-1971)

Census year	Males	Females	Persons
1881	90	4	48
1891	104	5	56
1901	98	6	53
1911	106	11	59
1921	122	18	72
1931	156	29	95
1941	249	73	161
1951	249	79	167
1961	344	130	240
1971	395	184	293

Pre-1951 figures relate to British India.

Source: D. Natarajan, All-India census reports on literacy. Census centenary monograph no. 9.

The spurts in literacy in 1931-41, 1951-61 and 1961-71 may be noted. Though male and female literacy has increased during the last 70 years, female literacy has grown relatively more.

TABLE 56 : RELATIVE PROGRESS OF FEMALE LITERACY (1901—1971).

Year	No. of literates		Literate males per 100 literate Females
	Males	Females	
1901	11,870,758	809,580	1,466
1911	13,552,737	1,298,484	1,043
1921	15,690,428	2,221,499	1,208
1931	22,274,035	3,977,034	560
1941	n.a.	n.a.	n.a.
1951	46,271,335	13,916,683	332
1961	77,906,038	27,565,962	283
1971	112,012,994	49,423,270	227

Note : Derived by applying literacy rate to the population sex-wise.

While there were 1,466 literate males per 100 literate females in 1901, the gap was narrowed to 227 in 1971. Both male and female literacy rates are, however, low when compared with the situation in developed countries.

These literacy rates are based on total population. A clearer picture of the progress of literacy over time can be obtained if age group 0-4 is excluded.

TABLE 57 : NUMBER OF LITERATES PER MILLE (ALL AGES ABOVE 5)

Year	Males	Females
1921	123	19
1931	139	23
1941	n.a.	n.a.
1951	271	88
1961	404	153
1971	453	215

The literacy rate has gone up sharply in the post-independence period. Even so the illiterates are more than 50 per cent in the case of males and more than 75 per cent in the case of females. Illiteracy is very high at older ages (see table 58),

TABLE 58 : PERCENTAGE DISTRIBUTION OF LITERATES AND ILLITERATES BY AGE GROUPS AND SEX (1951-1971)

		Literate males			Illiterate males			Literate females			Illiterate females		
		1951	1961	1971	1951	1961	1971	1951	1961	1971	1951	1961	1971
All ages (excluding 0-4)	T	27.14	40.39	45.28	72.86	59.61	54.72	8.86	15.33	21.48	91.14	86.67	78.52
	U	51.33	65.98	69.49	48.67	34.02	30.51	25.85	40.46	48.04	74.15	59.54	51.96
	R	21.97	34.26	38.79	78.03	65.74	61.21	5.66	10.14	15.13	94.34	89.86	84.87
5—9	T	12.40	24.99	26.72	87.60	75.01	73.28	6.04	14.44	18.54	93.96	85.56	81.46
	U	25.71	43.57	46.35	74.29	56.43	53.65	18.18	35.89	41.57	81.82	64.11	58.43
	R	10.11	21.18	22.46	89.89	78.82	77.54	3.96	10.12	13.55	96.04	89.88	86.45
10—14	T	30.85	54.40	60.28	69.15	45.60	39.72	14.17	28.41	37.84	85.83	71.59	62.16
	U	55.56	77.99	81.13	44.44	22.01	18.87	37.17	62.66	70.14	62.83	37 34	29.86
	R	25.99	49.10	55.12	74.01	50.90	44.88	9.66	20.74	29.75	90.34	79.26	70.25
15—19	T	33.86	52.04	62.97	66.14	47.96	37.03	13.22	23.78	36.92	86.78	76.22	63.08
	U	6.02	77.72	82.58	93.98	22.28	17.42	34.83	56.70	68.92	65.17	43.30	31.08
	R	27.10	45.21	56.94	72.90	54.79	43.06	8.58	16.30	27.71	91.42	83.70	72.29
20—24	T	—	49.78	59.85	—	50.22	40.15	8.63	18.21	27.94	—	81.79	72.06
	U	—	74.98	81.14	—	25.02	18.86	—	46.53	58.06	—	53.47	41.94
	R	—	42.10	52.05	—	57.90	47.95	—	11.83	19.40	—	88.17	80.60
25—34	T	31.33	42.49	49.27	68.67	57.51	50.73	8.63	13.90	18.75	91.37	86.10	81.25
	U	56.34	44.65	73.69	43.66	55.35	26.31	25.70	38.87	45.88	74.30	61.13	54.12
	R	25.31	41.43	41.75	74.69	58.57	58.25	5.42	8.56	12.15	94.58	91.44	87.85
35 +	T	25.75	35.32	37.05	74.25	64.68	62.95	5.30	7.70	10.43	94.70	92.30	89.57
	U	49.85	62.53	63.98	50.15	37.47	36.02	17.54	25.32	29.77	82.46	74.68	70.23
	R	20.92	29.18	30.30	79.08	70.82	69.70	3.13	4.40	6.23	96.87	95.60	93.77
Age not stated	T	11.69	15.70	21.40	88.31	84.30	78.60	3.59	4.29	9.26	96.41	95.71	90.74
	U	21.08	25.31	40.05	78.92	74.69	59.95	7.37	9.44	23.88	92.63	90.56	76.12
	R	10.11	14.43	17.35	89.89	85.57	82.65	2.95	3.62	6.38	97.05	96.38	93.62

Note : For 1951 census the percentages given against 15—19 relate to the age group 15—24. Separate data for age groups 15—19 and 20—24 are not available.

Much remains to be done in the sphere of adult education. The higher percentages of literates in all age groups in urban areas compared with rural areas point to the relatively rapid growth of education in urban areas. Though in 1971 there has been a fall in the percentage of illiterates at all ages relative to 1961, progress in literacy in age group 5-9 has been extremely slow. This, however, contrasts sharply with the figures of enrolment in schools. According to the latter figures, 81.7 per cent of children in age group 6-11 were enrolled in schools in 1970-71 against 26.7 per cent males and 18.5 per cent females in age group 5-9 reported as literate in the census. One explanation for this disparity in the two sets of figures seems to be that children attending first or second standard might not have been recorded as literate by virtue of the strict definition of literacy adopted in the census. A second reason for disparity may be that not all children who were enrolled at the beginning of the academic year (June 1970) continued to be in school till April 1971 when the census was undertaken, implying a heavy rate of drop-out and corresponding relapse into illiteracy. The above hypothesis seems to be borne out by the fact that while 81.2 million children were enrolled in schools during 1970-71 at the primary, middle and secondary levels, only 63.7 million were enumerated as full time students in census.

Literacy by educational levels. The classification of literates by educational standards gives an idea of literates of a recognised standard. This is useful for manpower planning. Table 59 gives the percentage distribution of population by educational levels. If the 'primary and above' levels are considered to be literate of a recognised standard, they together form only 19.70 and 45.90 for males in rural and urban areas respectively. In the case of females the respective percentages are 6.84 and 28.39. These figures bring out the gap between rural and urban areas as well as the relatively low literacy of rural females compared with rural males. Among males, nearly 75 per cent of the educated category of recognised standard

stopped at matriculation. Among females, about 90 per cent of the educated category stopped at matriculation.

TABLE 59 : PERCENTAGE DISTRIBUTION OF POPULATION BY EDUCATIONAL LEVELS (1971)

Level of education	Rural		Urban		Total	
	Males	Females	Males	Females	Males	Females
1. Illiterate	66.86	87.12	35.02	58.50	61.10	81.67
2. Literate (without educational level)	13.44	6.04	15.08	13.11	13.78	7.39
3. Primary	10.81	4.69	15.89	13.01	11.86	6.28
4. Middle	5.78	1.62	13.30	8.47	7.33	2.92
5. Matric or Higher secondary	2.67	0.45	12.82	5.55	4.77	1.42
6. Non-technical diploma	0.03	0.01	0.11	0.05	0.05	0.02
7. Technical diploma	0.06	0.03	0.29	0.09	0.11	0.04
8. Graduate and above	0.35	0.04	3.49	1.22	1.00	0.26

Note : Calculated from one per cent sample.

Geographic distribution. The distribution of literacy by states is shown in table 60. By and large the union territories have higher literacy rates compared with the major states. Kerala, Tamil Nadu, Maharashtra and Gujarat in the southern and western parts of India have greater literacy. Two other regions where literacy is above the national average are the eastern region comprising West Bengal, Manipur and Tripura and the northern states of Punjab and Himachal Pradesh. In the entire central and interior India, the literacy level is low,

TABLE 60 : LITERACY RATE 1971 (INCLUDING AGE GROUP 0-4)

Unit	Total Rural Urban	Percentage of literate and educated persons		
		Persons	Males	Females
INDIA	T	29.45	39.45	18.70
	R	23.74	33.76	13.17
	U	52.49	61.28	42.26
STATES				
1. Andhra Pradesh	T	24.57	33.18	15.75
	R	19.19	27.31	10.92
	U	47.08	57.30	36.31
2. Assam	T	28.72	37.19	19.27
	R	25.80	34.28	16.51
	U	58.69	64.54	50.89
3. Bihar	T	19.94	30.64	8.72
	R	17.17	27.64	6.39
	U	44.92	55.43	31.89
4. Gujarat	T	35.79	46.11	24.75
	R	28.33	38.92	17.19
	U	54.90	63.96	44.77
5. Haryana	T	26.89	37.29	14.89
	R	21.72	32.57	9.24
	U	51.00	59.12	41.48
6. Himachal Pradesh	T	31.96	43.19	20.23
	R	29.81	41.19	18.15
	U	60.54	66.76	52.24
7. Jammu & Kashmir	T	18.58	26.75	9.28
	R	14.11	22.17	4.98
	U	38.17	46.60	28.38
8. Kerala	T	60.42	66.62	54.31
	R	59.28	65.57	53.10
	U	66.31	71.99	60.62
9. Madhya Pradesh	T	22.14	32.70	10.92
	R	16.81	27.05	6.10
	U	49.55	60.46	36.98
10. Maharashtra	T	39.18	51.04	26.43
	R	30.63	43.22	17.84
	U	58.07	66.88	47.33
11. Manipur	T	32.91	46.04	19.53
	R	29.83	43.04	16.35
	U	53.24	65.80	40.43
12. Meghalaya	T	29.49	34.12	24.56
	R	23.40	27.68	18.94
	U	65.22	69.93	59.69

TABLE 60 : LITERACY RATE 1971 (INCLUDING AGE GROUP 0-4)—Contd.

Unit	Total Rural Urban	Percentage of literate and educated persons		
		Persons	Males	Females
13. Mysore	T	31.52	41.62	20.97
	R	25.13	35.40	14.54
	U	51.43	60.40	41.61
14. Nagaland	T	27.40	35.02	18.65
	R	23.71	30.51	16.39
	U	60.79	66.13	49.47
15. Orissa	T	26.18	38.29	13.92
	R	24.09	36.14	12.06
	U	49.00	59.94	36.05
16. Punjab	T	33.67	40.38	25.90
	R	27.81	34.69	19.88
	U	52.49	58.55	45.41
17. Rajasthan	T	19.07	28.74	8.46
	R	13.85	22.87	4.03
	U	43.47	55.53	29.69
18. Tamil Nadu	T	39.46	51.78	26.86
	R	32.13	45.14	18.98
	U	56.36	66.76	45.42
19. Tripura	T	30.98	40.20	21.19
	R	27.13	36.43	17.27
	U	64.01	72.42	55.03
20. Uttar Pradesh	T	21.70	31.50	10.55
	R	18.13	28.02	6.99
	U	44.10	52.08	34.38
21. West Bengal	T	33.20	42.81	22.42
	R	25.72	35.80	15.02
	U	55.93	62.01	47.84
UNION TERRITORIES				
1. Andaman & Nicobar Islands	T	43.59	51.64	31.11
	R	38.31	46.80	25.66
	U	61.53	66.93	51.85
2. Arunachal Pradesh	T	11.29	17.82	3.71
	R	9.79	15.77	3.00
	U	50.46	59.28	31.18
3. Chandigarh	T	61.56	66.97	54.35
	R	30.53	38.84	18.36
	U	64.80	70.03	57.89

TABLE 60 : LITERACY RATE 1971 (INCLUDING AGE GROUP 0-4)—Concld.

Unit	Total Rural Urban	Percentage of literate and educated persons		
		Persons	Males	Females
4. Dadra & Nagar Haveli	T	14.97	22.15	7.84
	R	14.97	22.15	7.84
	U	—	—	—
5. Delhi	T	56.61	63.71	47.75
	R	36.23	49.00	20.75
	U	58.95	65.37	50.90
6. Goa, Daman & Diu	T	44.75	54.31	35.09
	R	40.59	50.40	31.06
	U	56.32	64.39	47.21
7. Laccadive ,Minicoy & Amindivi Islands	T	43.66	56.48	30.56
	R	43.66	56.48	30.56
	U	—	—	—
8. Pondicherry	T	46.02	57.29	34.62
	R	38.60	41.14	25.87
	U	56.23	65.83	46.60

Source : Pocket book of population statistics. Census centenary, 1972.

ETHNIC COMPOSITION OF POPULATION

Language spoken and religion are usually considered to be the indicators of the ethnic composition of a population. At the 1961 census of India, 1,652 mother tongues were recorded. Not all these are spoken by large numbers. Data on mother tongue as recorded in the 1971 census have not yet been fully processed. The preliminary tabulations, however, show that there are as many as 281 languages/dialects spoken by more than 5,000 speakers each. Table 61 gives the percentages of speakers of the fifteen languages enumerated in Schedule VIII of the Indian Constitution. Hindi is spoken by about 162.6 million people constituting about 30 per cent of the population. This is also an official language of India along with English. At the other end of the spectrum is Sanskrit recorded as mother tongue by 2,212 persons. However, in view of its rich literature and its link with many Indian languages, it has been included as one of the languages specified in Schedule VIII of the constitution.

TABLE 61 : PERCENTAGE DISTRIBUTION OF SPEAKERS OF 15 LANGUAGES IN SCHEDULE VIII OF THE INDIAN CONSTITUTION (MOTHER TONGUE) 1971

State	Total Population	Assamese	Bengali	Gujarati	Hindi	Kannada	Kashmiri	Malayalam	Marathi	Oriya	Punjabi	Sanskrit	Sindhi	Tamil	Telugu	Urdu
INDIA	547,949,809	1.63	8.17	4.72	29.65	3.96	0.44	4.00	7.71	3.62	3.00	...	0.31	6.87	8.16	5.22
Andhra Pradesh	43,502,708	...	0.03	0.97	0.43	0.98	...	0.09	0.81	0.52	0.04	...	0.02	1.27	85.36	7.59
Assam	14,957,542	59.53	19.44	...	4.98	...	...	0.04	0.01	1.00	0.09	—	...	0.02	0.14	0.04
Bihar	56,353,369	...	3.47	0.04	35.11	...	...	0.02	0.02	0.61	0.14	...	0.01	0.03	0.06	8.86
Gujarat	26,697,475	...	0.02	89.39	1.26	0.03	...	0.07	1.24	...	0.10	...	2.28	0.06	0.06	2.18
Haryana	10,036,808	...	0.03	0.01	88.49	...	...	0.02	0.01	0.01	8.35	...	...	0.02	0.01	1.95
Himachal Pradesh	3,460,434	...	0.03	0.01	41.59	0.01	0.12	0.04	0.03	0.01	9.86	...	...	0.02	0.02	0.29
Jammu & Kashmir	4,616,632	...	0.02	...	0.93	...	52.48	0.03	0.02	0.02	28.12	—	...	0.02	0.02	0.28
Kerala	21,347,375	...	0.01	0.03	0.05	0.37	...	96.01	0.08	...	0.01	...	0.01	2.37	0.21	0.05
Madhya Pradesh	41,654,119	...	0.56	0.37	78.92	0.02	...	0.11	3.33	1.16	0.38	...	0.58	0.07	0.25	2.37
Maharashtra	50,412,235	...	0.18	2.75	3.49	1.54	...	0.36	76.60	0.02	0.33	...	0.86	0.46	1.52	7.26
Manipur	1,072,753	0.16	1.40	...	0.90	...	...	0.07	0.01	0.01	0.15	—	...	0.08	0.03	0.03
Meghalaya	1,011,699	2.31	9.29	0.01	1.25	...	...	0.07	0.03	0.02	0.24	...	0.01	0.02	0.02	0.14
Mysore	29,299,014	...	0.02	0.10	0.44	65.97	...	1.45	4.06	0.01	0.02	...	0.03	3.38	8.18	9.00
Nagaland	516,449	1.27	1.66	...	2.80	...	...	0.45	0.04	0.11	0.25	—	...	0.09	0.06	0.05
Orissa	21,944,615	...	1.51	0.06	1.10	...	...	0.05	0.01	84.12	0.08	...	0.01	0.04	2.28	1.31
Punjab	13,551,060	...	0.02	0.01	19.97	...	0.01	0.01	0.01	...	79.64	...	0.01	0.02	0.01	0.21

Rajasthan	25,765,806	...	0.04	0.14	60.83	....	...	0.03	0.12	0.02	5.61	...	0.93	0.01	0.01	2.53
Tamil Nadu	41,199,168	...	0.01	0.48	0.15	2.56	...	1.36	0.15	...	0.01	...	0.02	84.51	8.74	1.84
Tripura	1,556,342	0.01	68.79	...	1.44	...	...	0.02	0.01	0.89	0.03	—	...	0.01	0.13	...
Uttar Pradesh	88,341,144	...	0.15	0.01	81.41	....	...	0.01	0.01	...	0.58	...	0.09	0.01	0.01	10.50
West Bengal	44,312,011	0.01	85.32	0.08	5.58	...	...	0.03	0.02	0.34	0.15	...	0.01	0.05	0.19	2.14
Andaman & Nicobar Islands	115,133	0.01	24.42	0.14	12.14	0.17	0.01	12.12	0.10	0.22	0.89	—	0.01	12.61	8.13	2.16
Arunachal Pradesh	467,511	3.06	5.10	0.43	2.37	0.08	...	0.48	0.08	0.32	0.30	—	0.01	0.14	0.08	0.07
Chandigarh	257,251	0.02	0.52	0.08	55.61	0.06	0.13	0.42	0.27	0.04	40.89	...	0.05	0.44	0.17	0.66
Dadra & Nagar Haveli	74,170	—	0.01	11.98	1.50	0.01	—	0.03	57.69	...	...	—	0.04	0.01	0.01	0.18
Delhi	4,065,698	0.02	1.01	0.24	75.28	0.10	0.10	0.49	0.29	0.04	13.48	...	0.85	0.92	0.24	5.68
Goa, Daman & Diu	857,771	0.01	0.08	7.07	1.25	1.93	...	0.66	19.73	0.02	0.16	...	0.03	0.39	0.48	2.24
Laccadive, Minicoy & Amindivi Islands	31,810	—	0.01	...	0.18	0.05	—	83.90	0.03	—	0.01	—	—	0.36	0.02	0.10
Pondicherry	471,707	...	0.15	0.16	0.19	0.15	—	5.43	0.08	0.02	0.03	...	0.01	89.00	3.69	0.71

'...' = Negligible '—' = Nil

Note : Pocket book of population statistics-Census centenary, 1972.

RELIGION

In pre-independence days detailed tabulations of religion cross-classified by age and marital status were available. In the post-independence period, the tabulation has been restricted to distribution of the total population only. In the 1971 census, it is proposed to tabulate the questions on age at marriage and current fertility of currently married women by religion cross-classified by education. These tables are expected to throw light on fertility differentials by religion.

Table 62 gives the population by religion as reported in 1971 and percentage distribution of the population by important religious groups in India. Besides Hindus, Muslims, Christians, Sikhs, Buddhists and Jains, there are a number of other religious groups reported in the census. But their numbers do not exceed a million at the all-India level and hence are not presented here.

TABLE 62 : POPULATION BY VARIOUS RELIGIONS (1971)

Religion	Total pop. ('000)			Sex ratio	Proportion to total pop.		Decadal growth rate	
	Males	Females	Persons		1961	1971	1951-61	1961-71
Hindus	234,838	218,454	453,292	930	83.51	82.72	20.29	23.69
Muslims	31,962	29,456	61,418	922	10.70	11.21	25.61	30.85
Christians	7,162	7,061	14,223	986	2.44	2.60	27.38	32.60
Sikhs	5,584	4,795	10,379	859	1.79	1.89	25.13	32.28
Buddhists	1,943	1,869	3,812	962	0.73	0.70	2,267.0	17.20
Jains	1,343	1,262	2,605	940	0.46	0.47	15.17	28.48
Others	1,086	1,099	2,185	1,011	0.34	0.40	—13.07	26.10
Religion not stated	19	17	36	863	0.03	0.01	—	—
TOTAL	283,937	264,013	547,950	930	100.00	100.00	21.50	24.80

Source : 'Religions', Census of India—Paper 2 of 1972.

Hindus accounting for 82.72 per cent of the total population form the predominant part of India's population. Only a few states and union territories like Punjab, Jammu & Kashmir, Nagaland, Arunachal Pradesh, Meghalaya and Laccadive, Minicoy & Amindivi islands have Hindu populations below 50 per cent. Out of the 356 districts, the proportion of Hindus exceeds 80 per cent of the total population in 256 districts. In 62 districts it is between 50 and 80 per cent. In the remaining 38 districts, it is less than 50 per cent. The population of Hindus naturally therefore is closer to the general growth rate of 24.8 for the decade 1961-70.

Sixty-one million Muslims constituting 11.2 per cent of the total population form the next large section of the population. Jammu & Kashmir and Laccadive, Minicoy & Amindivi islands are the two areas where Muslims are in absolute majority. There are 38 districts in the country in which Muslims form 20 per cent of the population. The growth rate of Muslims during 1961-71 was higher than the national average. A large percentage among Muslims, lives in urban areas.

Christianity is the third major religious group in India, (2.60 per cent). Unlike Hindus and Muslims, Christians are almost concentrated in a few states. The three southern states of Kerala, Tamil Nadu and Andhra Pradesh together account for more than 60 per cent of the Christian population of the country. In the north-eastern states like Nagaland and Meghalaya, the population is predominantly Christian. Like Muslims, the Christians have also grown at a faster rate during 1961-71. Of the other three religions, Sikhs are concentrated largely in Punjab which accounts for 79 per cent of the total Sikh population of the country. Buddhists are mostly confined to Maharashtra. Though Jains are spread over Maharashtra, Rajasthan and Gujarat, even in these states they form a very small proportion of the total population. This is the only major religious community in which the number of persons living in urban areas exceeds the number living in rural areas.

4. POPULATION DISTRIBUTION AND INTERNAL MIGRATION

A number of urban centres have flourished in India for centuries. Yet owing to the agricultural character of its economy the country has remained predominantly rural. Apart from places like Varanasi and Allahabad (Prayag) which have attracted Hindu pilgrims from all over India, the rise of cities has been mostly linked with the fate of ruling dynasties. Thus the travelogue of foreigners who visited India from time to time speak of the splendour of capitals like Ujjain, Pataliputra and Kanchi. With the fall of the ruling dynasties, they often declined in importance. The late 19th and early 20th centuries witnessed the growth of industrial cities like Bombay and Calcutta where a number of cotton textile and jute factories came to be located. Being unplanned, the growth of these cities has created many problems in respect of housing, sanitation and transport.

The census of India has collected and tabulated information separately for rural and urban areas. The definition of urban areas has, however, changed from census to census. The urban areas included municipalities, cantonment areas and all places with a population of 5,000 and more. They also included a few places with population under 5,000 which were urban in the opinion of the census superintendent on the basis of criteria like density, economic and historical importance. It is this last clause which vitiates comparison in many cases. To obviate this arbitrariness, certain eligibility tests were adopted in the 1961 census to classify urban areas. These were (a) a density of not less than 1,000 per square mile (b) a population of 5,000 and (c) at least three-fourths of the working population being engaged in non-agricultural activities.

The 1971 census adopted the same definition. Granting these defini-

tional changes, the percentage of urban population to total had remained steady upto 1921 and then increased gradually over the years. The slight fall in proportion during 1911 has been attributed to the temporary evacuation of cities due to plague. A comparison of 1951 and 1961 figures has to be made with caution in view of the definition of urban areas adopted in the 1961 census. Whatever be the definitional and other effects, the process of urbanisation has been extremely slow with over 80 per cent of the population living in rural areas even in 1971. Industrialisation and consequent migration from rural to urban areas have been held as the most important factors in urbanisation by many demographers.

TABLE 63 : GROWTH OF URBAN POPULATION (1901—71)

Census year	No. of towns/town agglomeration	Total urban pop. (million)	Percentage of urban to total pop.	Percentage growth in urban pop. during the decade
1901	1,888	25.8	10.8	—
1911	1,875	25.9	10.3	0.3
1921	2,012	28.1	11.2	8.3
1931	2,145	33.5	12.0	19.1
1941	2,329	44.2	13.9	32.0
1951	2,924	62.4	17.6	41.4
1961	2,461	79.9	18.0	26.4
1971	2,641	109.1	19.9	38.2

Source : Country Statement for India. Second Asian Population Conference, Tokyo, 1-13 November, 1972

The number of towns declared as urban in each census has gone up from 1,888 in 1901 to 2,641 in 1971. The urban population has, however, quadrupled over the same period. The spurt observed during 1941-51 was due to the partition of India in 1947 and the consequent influx of refugees from Pakistan into the urban areas of India. The low growth rate during 1951-61 decade is, as pointed

out earlier, due to the change in definition during the 1961 census. A number of marginal towns in 1951 were categorised as 'rural' in 1961 following the stricter eligibility criteria imposed. If allowance is made for this, the urban growth rate during 1951-61 decade works out to 36.4 per cent which is still lower than 1941-51 growth rate. Though the degree of urbanisation is low, in terms of population the net increase during 1961-71 alone is more than the total urban population in 1921.

In Indian census, the towns are classified into following six groups based on population size.

Class	Population size
I Towns (cities)	100,000 & above
II	50,000 to 99,999
III	20,000 to 49,999
IV	10,000 to 19,999
V	5,000 to 9,999
VI	Less than 5,000

Table 64 presents the proportion of population of each class to the total urban population and the percentage growth rate of each class. The large-sized class I towns, generally referred to as cities, account for more than half the urban population in 1971. A part of the increase is due to class II towns jumping to class I. While the proportions of class II and class III towns have remained more or less the same during the last 70 years, the contribution of smaller towns of size below 20,000 has been shrinking rapidly, despite an increase in the number of such towns. This seems to confirm the view that these classes lose more by migration as well as by vertical movement of towns to higher classes. Thus the main trend of urbanisation seems to be that bigger towns are becoming bigger. Even among class I towns, urban agglomerations with a population of more than a million each account for nearly a half of the city and one-fourth of the total urban population during 1971. Location of industries and concentration of

services mostly in larger cities are two factors that continue to draw migrants from villages and smaller towns to bigger towns and cities.

TABLE 64 : PERCENTAGE OF POPULATION OF DIFFERENT SIZE CLASSES OF TOWNS AND THEIR GROWTH RATE (1901–1971)

Size class	1901	1911	1921	1931	1941	1951	1961	1971
I	22.9	24.2	25.3	27.4	35.4	41.8	48.4	52.4
	(4.0)	(17.3)	(25.1)	(68.5)	(65.1)	(44.5)	(49.4)	
II	11.8	10.9	12.4	12.0	11.8	11.1	11.9	12.2
	(—2.2)	(8.9)	(28.6)	(24.6)	(31.6)	(39.3)	(40.9)	
III	16.5	17.7	16.9	18.8	17.7	16.7	18.5	17.4
	(4.9)	(5.1)	(29.5)	(29.0)	(34.8)	(40.1)	(29.1)	
IV	22.1	20.5	18.9	19.0	16.3	14.0	13.0	12.0
	(—5.8)	(0.5)	(18.5)	(12.5)	(22.8)	(18.2)	(27.3)	
V	20.4	19.8	19.0	17.3	15.4	13.2	7.2	5.2
	(—2.8)	(4.5)	(7.7)	(17.8)	(21.5)	(—30.0)	(—0.1)	
VI	6.3	7.0	7.4	5.6	3.5	3.2	1.0	0.8
	(10.9)	(15.8)	(—10.2)	(—19.6)	(33.8)	(—62.4)	(16.2)	

Notes : 1. Figures within brackets give decadal growth rate.

2. From 1901 and 1961 a town group has been classified according to population.

3. In 1971 in respect of the following States and Union Territories, an Urban Agglomeration has been classified according to its total population :

Andhra Pradesh, Bihar, Himachal Pradesh, Madhya Pradesh, Mysore, Orissa, Uttar Pradesh, West Bengal, Chandigarh, Delhi and Goa, Daman and Diu.

Source : Paper 1 of 1971—Supplement, Census of India

Table 65 gives the relative rank of the ten largest cities in each census. While Varanasi and Allahabad, the two important Hindu pilgrim centres, were among the first ten cities in 1891, they are not in the 1971 list. In fact only six out of the ten cities of 1891 figure in the first ten in 1971. All these ten cities of 1971 are important industrial centres.

TABLE 65 : RANK OF TEN LARGEST CITIES (1891—1971)

Rank	1891	1901	1911	1921	1931	1941	1951	1961	1971
1.	Bombay	Calcutta	Calcutta	Bombay	Calcutta	Calcutta	Calcutta	Gr. Bombay	Calcutta
2.	Calcutta	Bombay	Bombay	Calcutta	Bombay	Bombay	Bombay	Calcutta	Gr. Bombay
3.	Madras	Madras	Madras	Madras	Madras	Madras	Madras	Delhi	Delhi
4.	Hyderabad	Hyderabad	Hyderabad	Hyderabad	Hyderabad	Hyderabad	Delhi	Madras	Madras
5.	Lucknow	Lucknow	Lucknow	Ahmedabad	Delhi	Ahmedabad	Hyderabad	Hyderabad	Hyderabad
6.	Benaras	Benaras	Delhi	Delhi	Ahmedabad	Delhi	Ahmedabad	Bangalore	Ahmedabad
7.	Kanpur	Delhi	Ahmedabad	Lucknow	Lucknow	Kanpur	Bangalore	Ahmedabad	Bangalore
8.	Delhi	Kanpur	Benaras	Kanpur	Amritsar	Amritsar	Kanpur	Kanpur	Kanpur
9.	Allahabad	Agra	Agra	Benaras	Kanpur	Lucknow	Poona	Poona	Poona
10.	Agra	Ahmedabad	Howrah	Howrah	Agra	Howrah	Lucknow	Nagpur	Nagpur

Functional classification: In the 1961 census, an attempt was made to classify towns broadly on the basis of the relative percentage of workers by industrial category. The functional categories were industrial towns, trade and transport towns, sub-divided into manufacturing towns, mining and plantation towns, artisan towns, trading towns and transport towns. Table 66 based on the 1961 census data shows that service towns are much more numerous than others. Among classes I and II, however, industrial towns predominate. This is due to the emergence of a large number of industrial complexes like Rourkela, Bhilai, Ranchi and Bokaro. An analysis of the migration data collected in the 1961 census revealed that 'manufacturing' and 'service' towns attracted the largest number of migrants from outside the state. The study also indicated that the proportion of 'craftsman, production process workers and labourers' among migrants is the largest in manufacturing cities, followed generally by 'sales workers' and clerical and related workers.

TABLE 66 : DISTRIBUTION OF TOWNS BY SIZE CLASS AND FUNCTIONAL TYPES (1961 CENSUS)

Size class	Service towns	Industrial towns	Trade & transport towns	Total
I	47	57	9	113
II	56	65	17	138
III	226	188	70	484
IV	342	313	93	748
V	353	300	108	761
VI	139	54	25	218
TOTAL	1,163	977	322	2,462

Source : Mitra, A. Internal migration and urbanisation in India (Part I), Mimeographed.

CHARACTERISTICS OF URBAN POPULATION

While a number of characteristics may be peculiar to a particular city or town, all urban areas share in general some common characteristics like a higher number of males, higher literacy, higher proportion of persons in non-agricultural occupations, etc. The available evidence is discussed below.

Sex ratio : The sex differential in growth rate has been a persistent feature of the country's population. A break-up of the growth rate into rural and urban components indicates that growth rate has been more in favour of males in urban areas. As a consequence, the urban sex ratio (table 67) has been moving in favour of males. A major reason for this is the influx of a large number of male workers into urban areas in search of employment.

TABLE 67 : SEX RATIO IN RURAL AND URBAN AREAS (1901—71)

Year	Rural	Urban	Total
1901	979	910	972
1911	975	872	964
1921	970	846	955
1931	966	838	950
1941	965	831	945
1951	965	860	946
1961	963	845	941
1971	949	858	930

Among urban areas, the sex ratio generally decreases with an increase in the size of the city (see table 68). Upto 1951, the sex ratio increased with size class upto V and then decreased. In the 1961 and 1971 censuses, the increases were noticed only upto class IV. Class IV and Class VI towns showed a lower sex ratio. The lower sex ratio of class VI towns (population below 5,000) may perhaps be attributed to the inclusion of a large number of project areas, industrial townships

and cantonment areas in this group. The urban sex ratio in India seems peculiar when compared with many developed countries. It has been observed by Kingsley Davis that cities in the United States with heavy industries are predominantly masculine, while those with clerical occupations are predominantly feminine. In India, however, no such trend is observed.

TABLE 68 : SEX RATIO BY SIZE CLASS OF TOWNS (1901—71)

Year	Class of towns						Total urban	Total rural
	I	II	III	IV	V	VI		
1901	785	935	940	967	968	927	910	979
1911	730	878	907	945	952	912	872	975
1921	709	836	874	930	941	905	846	970
1931	724	836	865	909	928	888	838	966
1941	721	867	873	923	934	894	831	965
1951	789	884	899	935	946	902	860	965
1961	799	868	885	914	902	854	845	963
1971	827	887	899	911	897	847	858	949

Source : Desai, P. B. Size and sex composition of population in India 1901-61

Literacy. An urban population is more literate than a rural population. Table 69 giving literacy by size class of cities, reveals that there is a sharp difference between cities, non-city urban and rural areas of India. The difference is sharper in the case of females than males. The gap between male and female literacy is slightly reduced as the size of the city grows.

TABLE 69 : ALL INDIA LITERACY RATES FOR CITIES, TOWNS AND RURAL AREAS

Unit	1961			1971		
	Persons	Males	Females	Persons	Males	Females
1. Cities over 1 million	56.40	63.85	46.36	59.22	66.02	50.44
2. Cities of 0.5 to 1 million	49.60	58.38	38.43	53.88	62.61	43.64
3. Cities of 0.1 to 0.5 million	48.52	58.51	36.78	53.67	62.30	43.73
4. Cities above 0.1 million	51.81	60.74	40.65	56.17	64.04	46.60
5. Non-city urban	42.99*	54.69*	29.73*	48.42	58.70	36.99
6. Urban India	46.94*	57.46*	34.48*	52.48	61.55	41.91
7. Rural India	19.00	29.07	8.54	23.60	33.77	12.92
8. All-India	24.02	34.44	12.95	29.34	39.51	18.44

The 1961 figures exclude NEFA and Goa, Daman & Diu. The 1971 figures are based on provisional population figures.

*Excludes Union Territories except Delhi.

Density. Among urban areas, the big cities exhibit very high densities. However, since cities vary widely in the extent of vacant land included in their jurisdiction, their densities are not strictly comparable. Table 70 gives the density of population per square kilometre for eight of the nine cities with population over one million in 1971.

TABLE 70 : DENSITY OF CITIES WITH POPULATION 1 MILLION OR MORE (1971)

	Urban agglomeration/Core city	Density km^2.
1.	Calcutta U.A.	12,364
	Calcutta M.C.	30,276
2.	Greater Bombay M.C.	13,640
3.	Madras U.A.	5,972
	Madras M.C.	19,293
4.	Hyderabad U.A.	6,018
	Hyderabad M.C.	9,494
5.	Ahmedabad U.A.	N.A.
	Ahmedabad M.C.	17,053
6.	Bangalore U.A.	9,466
	Bangalore city corporation & trust board area	11,462
7.	Kanpur City U.A.	4,265
	Kanpur M.C.	4,413
8.	Poona U.A.	3,498
	Poona M.C.	6,166

U.A.=Urban agglomeration M.C.=Municipal corporation

Source : Pocket book of population statistics—Census centenary 1972.

In all the cities, density in municipal area is higher than in the urban agglomeration.

Housing conditions. The high density of population in urban areas, specially in cities, has resulted in extreme overcrowding. One useful indicator of overcrowding is the percentage of households living in one room, two rooms, three

rooms, etc. presented in table 71 for a few cities. The data are derived from the 1971 census housing tables.

TABLE 71 : PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY THE NUMBER OF ROOMS OCCUPIED (1971)

City	1 room	2 rooms	3 rooms	4 rooms	5 rooms & above	Unspecified
1. Gr. Bombay	77.40	14.22	5.28	1.90	1.11	0.09
2. Calcutta	67.64	17.25	8.08	3.75	3.26	0.02
3. Poona	65.05	20.85	7.29	3.60	3.05	0.16
4. Kanpur	59.59	26.96	7.10	3.31	3.03	0.01
5. Ahmadabad	57.50	27.47	7.82	3.87	3.24	0.10
6. Delhi	57.39	25.38	9.36	4.28	3.10	0.49
7. Madras	53.57	24.43	10.95	5.19	5.39	0.47
All India						
Urban	50.10	26.93	11.42	5.71	5.64	0.20
Rural	47.27	28.47	12.14	6.04	6.02	0.06

In major industrial cities like Bombay, Calcutta, Poona, Kanpur and Ahmadabad, 85 to 90 per cent of the households live in one or two rooms. Though this percentage is lower in the case of other cities like Delhi, it is still higher than the all-India average for urban areas.

INTERNAL MIGRATION

Despite overcrowding, the population of urban India is growing faster than that of rural areas. Natural increase alone cannot explain all the growth. The other factor is internal migration from rural areas. Such migration affects not only the growth of a particular region but also the distribution of population over the different regions of the country. The special characteristics of the migrants and selectivity regarding the area of migration makes the study of migration interesting. However, such a study is complicated by the fact that internal migration has not been defined uniquely. In addition to conceptual imperfections

frequent changes in the administrative units limit the use of data when one wants to compare over time.

In India, census information on migration has been traditionally collected on the basis of place of birth. In the 1961 and 1971 censuses, the scope was enlarged. In the 1961 census, each migrant was asked his place of birth, whether it was rural or urban and the duration of residence at the place of enumeration. A number of cross-tabulations were provided. In the 1971 census, classification of migrants was done for the first time, on the basis of place of last residence. To preserve comparability with the previous censuses, a question on the place of birth was also included. Complete tabulation based on the 1971 census is not yet ready. However, a one per cent sample was tabulated in advance and two tables ; the first classifying persons by their place of birth and the second by their place of last residence ; are available. The latter table also classifies migrants by their duration of residence at their place of enumeration. In addition to the census, national level picture is also available from a few NSS reports.

Table 72 presents a snapshot picture of migration based on place of birth during the 1971 census. Of the estimated population of 545 millions in 1971, about 375 millions have remained in their place of birth, 309 millions in rural areas and 66 millions in urban areas. Among the remaining 170 million persons, 106 millions were enumerated within the district of enumeration and another 35 millions within the state. Only 19 millions were enumerated in a state outside their place of birth. Even among the 19 million people who moved outside the state of their birth, most of the persons may be short-distance migrants from adjacent border districts.

A break-up of these figures by sex (table 73) reveals that females predominate among the migrants by place of birth. This has been attributed to widely prevalent social customs like arranged marriages in which the brides are mostly selected from outside the village, resulting in heavy short-distance movements.

TABLE 72 : DISTRIBUTION OF POPULATION (IN ABSOLUTE FIGURES AND PERCENTAGE) ACCORDING TO PLACE OF BIRTH (1971)

Place of birth	Sector	Enumerated in rural or urban area					
		Total		Rural		Urban	
		Persons (million)	%	Persons (million)	%	Persons (million)	%
Total population		545	100.00	437	100.00	108	100.00
A. Born in India	R	446	81.83	422	96.57	24	22.22
	U	88	16.15	8	1.83	80	74.08
	UC	2	0.37	2	0.46	—	—
I. Within the state of enumeration	R	434	97.31	416	98.58	18	75.00
	U	82	93.18	7	87.50	75	93.75
	UC	1	50.00	1	50.00	—	—
(a) In place of enumeration	R	309	71.20	309	74.28	—	—
	U	66	80.49	—	—	66	88.00
(b) Elsewhere in the district of enumeration	R	98	22.58	88	21.15	10	55.56
	U	7	8.54	4	57.14	3	4.00
	UC	1	100.00	1	100.00	—	—
(c) In other districts of the state	R	27	6.22	19	4.57	8	44.44
	U	9	10.97	3	42.86	6	8.00
II. States in India beyond the state of enumeration	R	12	2.69	6	1.42	6	25.00
	U	6	6.82	1	12.50	5	6.25
	UC	1	50.00	1	50.00	—	—
B. Born in countries other than India		9	1.65	5	1.14	4	3.70

Note : 1. Those born in India and outside India add-up to 100.00

2. Among those born in India, those born within the state of enumeration and outside the state, add-up to 100.00 separately for rural and urban areas.

3. For those born within the state of enumeration : (a)+(b)+(c) add-up to 100.00 separately for rural and urban areas.

Source : Census of India 1971, Series 1—India, Part II Special.

TABLE 73 : POPULATION BY PLACE OF BIRTH AND SEX (1971)

(in 000's)

	Enumerated in rural areas		Enumerated in urban areas		Total	
	Males	Females	Males	Females	Males	Females
1. Born elsewhere in district of enumeration						
Rural	18,167	70,084	4,530	5,730	22,696	75,814
Urban	1,362	2,646	1,241	1,674	2,603	4,320
2. Born in other districts of State						
Rural	4,899	13,699	4,264	3,634	9,163	17,334
Urban	962	1,565	2,889	3,208	3,851	4,773
3. Born in other states of India						
Rural	2,284	3,913	3,597	2,042	5,881	5,955
Urban	573	694	2,670	2,312	3,243	3,006
4. Unclassifiable	259	649	255	176	514	825

Source : Census of India 1971, Series I—India, Part II Special.

The picture of migration by place of last residence is not much different as may be seen from table 74 giving the percentage distribution of migrants by place of birth as well as place of last residence.

About 70 per cent of the female migrants move within the district of enumeration as against 50 per cent in case of males. While about 18 per cent of males move beyond the state of enumeration, the corresponding percentage for females is only eight. The large percentage of 'born outside India' or 'resided outside India' is due to the partition of India in 1947 and the consequent mass movement of population.

TABLE 74 : PERCENTAGE DISTRIBUTION OF MIGRANTS BY SEX AND PLACE OF ENUMERATION (1971)

Place of enumeration	Migrants by			
	Place of birth		Place of last residence	
	Males	Females	Males	Females
1. Elsewhere in the district of enumeration	48.02	69.08	50.67	70.35
2. Other districts of the state of enumeration	24.72	18.96	24.51	18.70
3. States of India beyond the state of enumeration	18.15	8.37	18.01	8.30
4. Outside India	9.11	3.59	6.81	2.65
TOTAL	100.00	100.00	100.00	100.00

Source : Census of India 1971, Series 1—India, Part II Special.

Table 75 brings out movement from rural to rural, rural to urban, urban to rural and urban to urban areas.

More than 70 per cent of the total migrants (52.7 per cent in the case of males and 78.7 per cent in the case of females) move from rural areas to other rural areas. While this can be partly explained by social customs like arranged marriages and return of the females to their parents' house for confinement, a substantial proportion in the case of males is hard to explain in the absence of economic factors. Significantly such migrants form a high proportion of total migrants in less developed states like Assam, Bihar, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh. Still harder to explain is the reverse migration of 3.8 million males from urban to rural areas. A large part of it may be persons who had moved to urban areas in search of seasonal employment and returned to their villages. The near balance of male and female migrants to urban areas is in contrast to the general pattern of migration to urban areas observed in industrialised western countries in which males moving in search of employment far

TABLE 75 : MIGRATION STREAM BY ORIGIN AND DESTINATION BASED ON PLACE OF LAST RESIDENCE (1971)

(in 000's)

Place of last residence	Males enumerated in			Females enumerated in		
	Rural	Urban	Total	Rural	Urban	Total
Rural	26,441 (52.70)	11,753 (23.43)	38,194 (76.13)	91,135 (78.65)	11,323 (9.77)	102,458 (88.42)
Urban	3,825 (7.62)	8,152 (16.25)	11,977 (23.87)	5,348 (4.61)	8,074 (6.97)	13,422 (11.58)
TOTAL	30,266 (60.32)	19,905 (39.68)	50,171 (100.00)	96,483 (83.26)	19,397 (16.74)	115,880 (100.00)

Source : Census of India 1971, Series 1—India, Part II Special.

Note : The percentage to total migrants of each sex is given in brackets.

outweigh females. In India such 'pull' factors seem to be restricted to major cities only.

An important characteristic of the pattern of migration in India is the tendency to settle down at one place for a long period. This is reflected in table 76 classifying migrants by their duration of residence in the place of enumeration. A large proportion of persons of each sex could not state even approximately the duration of residence. Such inability naturally raises the question of reliability of the period reported in the other cases. Bearing in mind this limitation, one finds that about 50 per cent of migrants are reported to have stayed at the place of residence for more than ten years. As against this, only eight per cent of male and three per cent of female migrants had moved into the place of enumeration during the previous year. A sex differential is clearly visible from the figures. While among females about 56 per cent stayed at their place of enumeration for more than ten years the corresponding figure for males is a little over 35 per cent. The reverse is true where duration of residence less than 5 years is considered.

TABLE 76 : PERCENTAGE DISTRIBUTION OF MIGRANTS BY DURATION OF RESIDENCE IN PLACE OF ENUMERATION

Sex	Duration of residence						
	Less than 1 year	1—4 years	5—9 years	10—19 years	20+ years	Period not stated	Total
Males	7.75	23.35	13.90	16.20	18.83	19.97	100.00
Females	2.72	13.93	12.79	23.01	33.44	14.11	100.00
Persons	3.97	16.26	13.06	21.33	29.96	15.42	100.00

Source : Census of India 1971, Series 1—India, Part II Special.

Migration by age. A distinctive feature of the migrants is their adult age structure. Since most of the females change their residence owing to marriage or pregnancy, it is natural to expect that more female migrants are in the prime of reproductive age groups. While in the population 9.51 per cent and 15.82 per cent of females were in age groups 18—22 and 23—32 respectively, the corresponding percentages among female migrants were 24.12 and 27.23. Age groups 0—12 and 33+ had a smaller proportion of migrants. Among male migrants about 30 per cent were in the adult age group 23—32. Their percentage in age group 18—22 was 16.21 significantly higher than that of the general male population (9.03). It was still lower than that of females. This may be attributed to the fact that in India most of the females are married before reaching the age of 22 and consequently move over to their husbands' place before that.

As the population of a state has an important bearing on political and economic developments, its redistribution through internal migration merits mention. The available data indicate that the economically less developed states like Bihar, Kerala, Rajasthan and Uttar Pradesh lose to other states through migration. A notable exception in this group of losing states is the highly developed state of

Punjab. On the other hand, the major industrial states of Maharashtra, West Bengal and the union territories of Andaman & Nicobar islands, Chandigarh and Delhi have gained heavily in population through net in-migration. In states like Assam and Madhya Pradesh, which are generally considered to be economically less developed, in-migrants exceed out-migrants. This may be attributed to the large number of tea estate labourers in Assam drawn from other states and the location of new industrial and mining units in Madhya Pradesh. In most of the other major states of India like Andhra Pradesh, Gujarat, Haryana, Jammu & Kashmir, Mysore, Orissa and Tamil Nadu, in-migrants and out-migrants seem to balance each other.

5. LABOUR FORCE

According to international recommendations, the term 'labour force' includes, in addition to persons who actually work for wages and salaries, 'own account' workers, employers and unpaid family workers, those who are unemployed but are seeking work. This does not include those engaged in activities which are not economically productive, like rentiers, pensioners, beggars and dependents. This chapter discusses some aspects of the labour force of India with the help of census data.

Information on employment has been collected in successive censuses of India from 1881 onwards. Each census, however, used a different concept to define a worker, making inter-censal comparison difficult. Broadly speaking upto 1951, the classification as 'worker' and 'non-worker' was based on the 'dependency approach' in which persons were classified as earners, earning dependents and non-earning dependents on the basis of their 'gainful occupation'. This approach was based on the idea that each person has a more or less stable functional role either as bread-winner or housewife or student and this role was independent to some extent of his activity at a particular point of time. With stagnant or slow economic development, an unorganised labour market and seasonal employment in agriculture, this was considered the best approach possible. With the emergence of an organised labour force and modern wage sectors of the economy, the concept had to undergo suitable changes. Accordingly in the 1961 and 1971 censuses, a dual approach was adopted in which for those employed in traditional activities like agriculture, the activity during the last season was recorded, while in the case of those in regular employment, a reference period was adopted and the activity during

that period entered. The definitions adopted in the 1961 and 1971 census were as follows.

In the 1961 census, the basis of work in seasonal activities like cultivation, dairying and household industry was whether the person had some regular work of more than one hour a day throughout the greater part of the working season. In the case of regular employment in any trade, profession, service or business, the basis was whether the person was employed during any of the 15 days preceding the day on which the household was visited. If on the revisional round such a person was found to be unemployed, no change was to be made in the original entry. Any woman who, in addition to her household work, engaged herself in work for sale or wages, or in domestic service for wages for others, was treated as a worker.

The 1971 census divided all persons into two broad streams—workers and non-workers—according to the main activity that the person returned himself as engaged in mostly. A 'worker' was a person whose main activity was participation in any economically productive work by his physical or mental activity. Work involved not only actual work but also effective supervision and direction of work. The reference period was one week prior to the date of enumeration in the case of regular work. If a person had participated in any such regular work on any one of the days during this period and this had been returned as his main activity, the person was categorised accordingly.

In respect of seasonal work, a person's main activity was ascertained with reference to such work in the last one year even if he was not economically active in the week prior to enumeration.

A person performing one's own household duties or who was primarily a student attending an educational institution, even if such a person helped in the family economic activity but not as a full-time worker, was not treated as a worker

for 'main activity'. A pensioner who did not have to work for receiving his pension was not treated as economically active unless he was also engaged in some other economic activity and returned it as his main activity.

Levels and trends of labour force. According to the 1971 census, the number of workers was 180.4 million. The rural-urban and sex break-ups of this figure were as follows (table 77).

TABLE 77 : NUMBER OF WORKERS AND THEIR PERCENTAGE TO TOTAL POPULATION BY RURAL-URBAN AREAS AND BY SEX (1971)

	No. of workers (in millions)			% of workers to total pop.		
	Total	Rural	Urban	Total	Rural	Urban
Persons	180.4	148.4	32.0	32.9	33.8	29.3
Males	149.1	120.4	28.7	52.5	53.5	48.8
Females	31.3	28.0	3.3	11.9	13.1	6.6

About 32.9 per cent of the population (52.5 percent of males and 11.9 per cent of females) were working. Compared with urban areas, the activity rate was higher in rural areas. The contrast between males and females is still more striking in rural and urban areas. The low participation rate implies that for every economically active person there are two who depend on him. Such high dependency rates are found in most parts of Latin America as well as in northern Africa.

In addition to those whose main activity was 'worker' there were about 2.4 million non-workers who contributed to economically active work though not on a full scale. Table 78 presents the distribution of these persons in rural and urban areas.

About 2.3 million of the 2.4 million are females since many of the housewives who contribute to economic activity would be classified under this category according to the criteria adopted in the 1971 census. A large proportion of such part-time workers is in rural areas.

TABLE 78 : NUMBER OF NON-WORKERS WHO CONTRIBUTE TO ECONOMIC ACTIVITY AS SECONDARY WORK—CENSUS (1971)

Sex	Non-workers (in 00's)		
	Total	Rural	Urban
Persons	24,335	22,296	2,039
Males	1,227	924	303
Females	23,108	21,372	1,736

Source : Census of India 1971, Series I—India, Part II Special.

Age specific activity rate. Out of the 180.4 million workers recorded in the 1971 census, about 10.7 million were children below age 15 and another 14.1 million were old persons of age 60 and above (table 79). A majority of these workers were in rural areas. As much as 77 per cent of males aged 60 and above in rural areas and 52 per cent in urban areas continued to work, though their contribution to total activity rate was small. In age group 20—59, the activity rates are quite high for males. The rural-urban differential in the case of males in ages below 25 and above 50 reveal that in urban areas, the males enter the labour force later and withdraw earlier. In contrast to the males, the female activity rate does not exceed 25 per cent in any age group. The extent of women's participation in the labour force is determined, among other things, by factors like marital status, number of children they have to take care of, the additional income they can earn and above all the social outlook on female employment. In rural areas, where one has to work for subsistence, female activity rates are slightly higher. Even here household duties claim priority over other work. It is no wonder that participation rates are low. What is striking is that despite higher literacy the activity rate is lower in urban areas compared with rural areas at each age group. Classification of urban workers by their educational levels shows that even among female graduates or

TABLE 79 : NUMBER OF WORKERS AND ACTIVITY RATE BY AGE GROUP, SEX AND RESIDENCE (1971)

Age group	Number of workers (in 000's)						Activity rate					
	Rural		Urban		Total		Rural		Urban		Total	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
0—14	7,277	2,686	608	168	7,885	2,854	7.52	2.96	2.76	0.82	6.63	2.56
15—19	11,952	3,172	1,975	273	13,927	3,445	62.09	18.39	33.12	5.47	55.24	15.49
20—24	13,667	3,391	3,863	449	17,530	3,840	86.30	20.20	67.44	9.50	81.30	17.85
25—29	14,784	3,559	4,362	481	19,146	4,040	95.33	21.78	90.53	11.63	94.19	19.73
30—39	26,830	6,344	7,674	842	34,504	7,186	97.56	23.44	95.45	13.05	97.08	21.44
40—49	21,068	4,673	5,639	617	26,707	5,290	97.58	24.12	95.16	14.47	97.06	22.38
50—59	13,907	2,649	3,002	331	16,909	2,980	95.46	20.78	87.89	12.66	94.02	19.40
60 +	10,910	1,490	1,538	170	12,448	1,660	77.42	11.31	55.36	6.42	73.78	10.49
Age not stated	13	3	6	1	19	4	29.51	5.86	52.36	7.62	33.96	6.05

Source: Census of India 1971, Series 1–India, Paper 3 of 1972.

post-graduates, only about 22 per cent and 43 per cent participate in economic activity as against 74 per cent and 85 per cent respectively in the case of males (table 80).

TABLE 80 : ACTIVITY RATE BY EDUCATIONAL LEVEL—URBAN AREAS CENSUS (1971)

Educational level	Activity rate	
	Males	Females
1. Matriculation or higher secondary	63.49	13.34
2. Non-technical diploma or certificate not equal to degree	64.12	22.22
3. Technical diploma or certificate not equal to degree	79.31	60.85
4. Graduate degree other than technical degree	73.48	21.59
5. Post-graduate degree other than technical degree	84.67	42.89
6. Technical degree or diploma equal to degree or post-graduate degree	81.13	63.17
(a) Engineering & technology	81.95	32.55
(b) Medicine	76.12	71.23
(c) Agriculture, veterinary & dairying	89.47	16.67
(d) Teaching	84.82	63.71
(e) Others	77.50	56.52

Note : Calculated from one per cent sample data.

Activity pattern of workers. The classification of workers by industry, occupation and employment status reflects the extent of specialisation and diversification of labour, considered by economists as indicators of economic progress. Such a classification when compared over time reveals the relative changes in the

structure of the economy. With economic development, there is a shift from the primary to secondary and tertiary sectors. In India, the share of the secondary and tertiary sectors in employment still remains small, its economy remaining predominantly agrarian. The pattern of activity has been fairly stable over the last 70 years as shown by table 81.

TABLE 81 : PERCENTAGE DISTRIBUTION OF WORKERS BY SECTORS OF EMPLOYMENT (1901—71)

Year	Percentage distribution in sector of employment								
	Primary			Secondary			Tertiary		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1901	71.76	70.37	74.46	12.61	12.31	13.25	15.63	17.32	12.29
1911	74.86	73.66	77.14	11.13	10.97	11.45	14.01	15.37	11.41
1921	75.99	74.54	78.80	10.41	10.51	10.21	13.60	14.95	10.99
1931	74.75	74.08	76.23	10.21	10.43	9.74	15.04	15.49	14.03
1951	72.12	69.08	79.57	10.62	11.59	8.26	17.26	19.31	12.17
1961	73.42	69.18	82.61	10.56	11.48	8.56	16.02	19.34	8.83
1971	72.56	70.38	82.97	10.69	11.33	7.67	16.75	18.29	9.36

Source : 1. Figures for 1901—61 are from Country statement for India, Asian population conference, New Delhi ; 10—20 December, 1963.
2. 1971 figures have been calculated from one per cent sample data.

Apparently, industrial development could not so far make a significant impact on the proportion of workers engaged in agricultural activities. This may probably be due to the capital intensive nature of the industries started during the last two decades.

Workers by industrial categories. The bulk of Indian male workers depend on agriculture, either as cultivators or as agricultural labourers. Further classification of these persons by industry, occupation or employment status was not attempted in the Indian census. While male cultivators outnumber male agricultural

labourers, female agricultural labourers exceed cultivators. Apart from these two, manufacturing —category V(a) & V(b) —and other services, are the only two sizeable categories. As is common in such agrarian economies, a large proportion of the workers engaged in manufacturing are in household industries where production is carried on in conventional ways with little or no power-driven machines. Productivity is, therefore, low. From the employment point of view, this sector is vital specially in rural areas. In the case of females, this sector provides more employment than non-household manufacturing. The contribution of other industrial categories like 'construction' and 'mining and quarrying' to total employment is marginal. The number of workers by industrial categories is shown in table 82.

TABLE 82 : WORKERS BY INDUSTRIAL CATEGORIES—CENSUS (1971)

	Industrial category	Rural		Urban		Total	
		Males	Females	Males	Females	Males	Females
I	Cultivators	67,417,094	9,127,338	1,493,142	139,133	68,910,236	9,266,471
II	Agricultural labourers	30,358,984	15,210,995	1,336,000	583,404	31,694,984	15,794,399
III	Livestock, forestry, fishing, hunting & plantations, orchards & allied activities	3,043,969	714,673	469,879	68,280	3,513,848	782,953
IV	Mining & quarrying	510,691	91,212	288,005	32,854	798,696	124,066
V	Manufacturing, processing, service & repairs—						
	(a) Household industry	3,764,187	999,049	1,256,706	331,772	5,020,893	1,330,821
	(b) Other than household industry	2,965,888	435,716	6,884,920	429,281	985,808	864,997
VI	Construction	988,780	107,300	1,023,051	96,177	2,011,831	203,477
VII	Trade & commerce	3,340,876	282,425	6,141,168	273,774	9,482,044	556,199
VIII	Transport, storage & communications	1,171,154	38,915	3,084,103	107,029	4,255,257	145,944
IX	Other services	6,846,689	958,655	6,689,850	1,270,281	13,536,539	2,228,936
TOTAL WORKERS		120,408,312	27,956,278	28,666,824	3,331,985	149,075,136	31,298,263

Source : Census of India 1971, Series 1—India, Paper 3 of 1972, Economic characteristics of population.

Classification by industrial divisions. Table 83 brings out the percentage distribution of workers by industrial divisions and important major groups which account for more than ten per cent of employment in each division. In view of the unique position of household industries in the Indian pattern of employment, these are shown separately. Divisions 0—3 account for about 41.1 per cent of non-agricultural employment in the country, the percentage being 48.4 in rural areas and 34.4 in urban areas. The higher percentage in rural areas is due to division '0'. Mining and quarrying provides very little employment. Plantation, livestock production, manufacture of cotton textiles and textile products, wood products, etc., provide employment to a large number of workers. Retail trade in food articles,

TABLE 83 : DISTRIBUTION OF WORKERS ENGAGED IN INDUSTRIES ACCOUNTING FOR MORE THAN 10 PER CENT OF THE EMPLOYMENT IN THAT DIVISION

Division/ Major group	Description	Percentage distribution					
		Rural			Urban		
		Persons	Males	Females	Persons	Males	Females
0	Agriculture, Hunting, Forestry and Fishing	14.43	13.60	19.51	2.02	1.94	2.79
	01—Plantations	30.70	22.96	63.74	16.03	10.70	52.99
	02—Livestock production	44.59	49.19	24.99	29.64	31.52	16.55
	06—Fishing	12.74	15.03	3.01	24.07	26.31	8.48
1	Mining and Quarrying	2.17	2.14	2.35	1.08	1.06	1.27
	10—Coal mining	44.94	49.44	19.81	64.10	66.93	40.37
	12—Metal ore mining	13.82	11.38	27.45	13.98	13.28	19.88
	19—Other mining	39.97	37.72	52.51	18.92	16.46	39.45
	HOUSEHOLD INDUSTRIES						
2&3	Manufacturing & Repair	31.83	30.46	40.19	31.31	31.19	29.44
	22—Manufacture of beverages, tobacco and tobacco products	10.20	6.72	22.64	10.31	6.31	25.23
	23—Manufacture of cotton textiles	17.03	16.40	19.27	28.98	26.68	37.50
	26—Manufacture of textile products	12.28	12.48	11.55	13.17	14.22	9.29
	27—Manufacture of wood & wood products	20.02	20.36	18.80	11.06	11.49	9.43

TABLE 83—(Concld).

		Percentage distribution					
		Rural			Urban		
		Persons	Males	Females	Persons	Males	Females
	NON-HOUSEHOLD INDUSTRIES						
2&3	Manufacturing and Repair						
	23—Manufacture of cotton textiles	13.40	12.83	16.03	19.27	18.38	28.77
	26—Manufacture of textile products	12.01	11.76	13.18	9.19	9.23	8.83
	27—Manufacture of wood & wood products	15.60	15.83	14.50	6.58	6.68	5.50
4	Electricity, Gas and Water						
	40—Electricity	87.39	87.60	68.18	86.75	86.79	85.33
5	Constructions	4.35	4.61	2.79	3.77	3.81	3.37
	50—Construction	96.63	96.58	97.18	92.70	92.20	98.28
6	Wholesale and Retail trade and Restaurants and Hotels	13.67	14.32	7.52	19.03	20.02	9.16
	65—Retail trade in food articles	58.64	57.71	69.45	41.90	40.95	62.52
	68—Retail trade in others	10.19	10.59	5.49	16.70	16.95	11.17
7	Transport, Storage and Communications	4.61	5.25	0.69	10.13	10.88	2.67
	70—Land transport	78.21	78.00	87.85	80.90	81.24	67.44
	75—Communications	14.61	14.72	9.72	9.76	9.44	22.67
8	Financing, Insurance, Real Estate and Business Services	1.01	1.16	0.10	3.67	3.91	1.29
	80—Banking and similar type of financial industries	44.98	44.89	51.35	35.47	35.29	41.02
	82—Real Estate & business services	40.35	40.47	32.43	46.20	46.53	36.23
9	Community, Social and Personal Services	25.19	25.41	23.91	25.70	23.63	46.39
	90—Public administration and defence services	25.68	29.09	3.53	37.87	42.99	11.92
	92—Education, scientific & research services	27.33	27.28	27.65	18.07	14.69	35.22
	96—Personal services	26.90	23.71	47.65	20.05	18.12	29.85
X	Activities not adequately defined	2.25	2.15	2.88	2.17	2.05	3.33

Source : Derived from one per cent sample data.

beverages and tobacco products account for the bulk of employment under division '6' (wholesale and retail trade). Among 'services' public administrative services and educational and scientific services account for about 75 per cent. In all the above services, women participate in a good number, specially in urban areas. Manufacture of cotton textiles, educational and scientific services and personal services in particular employ a large number of females in urban areas. In rural areas, plantation and personal services play a key role in female employment.

Workers by employment status. In the 1971 census, information on the employment status was collected for workers other than cultivators and agricultural labourers. While in the case of workers in non-household industry, trade, business, profession or service, the usual four-fold classification into employer, employee, single worker and family worker was adopted, those engaged in household industry were classified as employee and single worker only. Table 84 presents the workers by their employment status in rural and urban areas.

TABLE 84 : PERCENTAGE DISTRIBUTION OF WORKERS BY EMPLOYMENT STATUS, RURAL-URBAN AND SEX (1971)

Status	Rural		Urban		Total	
	Males	Females	Males	Females	Males	Females
Employer	3.4	1.1	6.1	1.4	5.0	1.2
Employee	55.1	57.1	66.6	73.5	61.7	64.7
Single worker	34.5	29.6	24.5	21.6	28.8	25.9
Family worker	7.0	12.2	2.8	3.5	4.5	8.2

Source : Derived from one per cent sample data.

The proportion of single workers and family workers is higher in rural areas as compared with urban areas. On the other hand the proportion of employees and employers is higher in urban areas. Relatively larger proportions are returned as family workers among females in both rural and urban areas. The proportion of female employees is distinctly higher in both rural and urban areas.

Employment status by industrial divisions. In rural areas division '0' (agriculture, hunting, forestry and fishing) and division '6' (wholesale and retail trade, restaurants and hotels) together account for a sizeable proportion of family workers in the non-household industry, trade, profession or service (table 85). Their proportion is quite substantial in major groups 02 (livestock production) and 65 (retail trade in food articles, beverages, tobacco and intoxicants). The latter group has the highest number of single workers as well as employers among major groups. This is indicative of the fact that retail trade is carried out either by the worker himself or with the help of family workers. In view of the small size of the retail trading establishments, the number of employees is not high though the number of employers is very high. While there are about 0.51 million employers in this group, the number employed is only 0.67 million. Employees predominate in the major groups '90' (public administration and defence services) and '92' (education, scientific and research services) in the case of males. Employees in these two groups form about 30 per cent of total employees in rural areas. While education services employ a large number of females, there are only a few female employees under public administrative services. A significant proportion of female employees is found in group '01' (plantations).

In the household sector in rural areas, manufacture of cotton textiles, manufacture of wood and wood products, furniture and fixtures, and manufacture of metallic mineral products seem to depend on family workers to a great extent. In

TABLE 85 : PERCENTAGE DISTRIBUTION OF EMPLOYER, EMPLOYEE, SINGLE WORKER AND FAMILY WORKER IN THE INDUSTRIAL DIVISION, INDIA 1971 (ONE PER CENT SAMPLE)

Division	Rural Urban	Employer		Employee		Single worker		Family worker	
		P	F	P	F	P	F	P	F
0	R	1.8	0.8	47.7	67.5	32.6	17.6	17.9	14.1
	U	3.5	0.5	55.5	67.6	31.1	19.1	9.9	12.8
1	R	1.0	0.2	82.7	78.5	14.1	16.9	2.2	4.4
	U	0.9	0.3	93.0	87.8	5.5	10.7	0.6	1.2
2 & 3	R	2.8	0.8	58.5	63.7	32.2	26.1	6.5	9.4
	U	4.7	1.3	74.4	75.8	18.2	18.2	2.7	4.7
4	R	0.2	—	96.6	90.9	3.2	9.1	—	—
	U	0.4	—	96.6	97.3	3.0	2.7	—	—
5	R	1.7	0.3	58.0	65.8	37.6	27.6	2.7	6.3
	U	3.8	0.1	56.5	65.1	38.5	33.4	1.2	1.4
6	R	11.4	5.6	17.0	8.1	62.6	70.1	9.0	16.2
	U	16.6	7.6	32.3	18.4	44.8	65.3	6.3	8.7
7	R	0.9	—	79.6	66.4	18.6	30.4	0.9	3.2
	U	1.9	—	76.3	72.4	21.3	27.2	0.5	0.4
8	R	4.6	2.7	71.4	83.8	22.5	13.5	1.5	—
	U	6.1	3.0	71.9	87.4	20.5	7.8	1.5	1.8
9	R	0.8	0.3	72.3	61.4	22.0	24.9	4.9	13.4
	U	1.3	0.5	84.7	86.6	12.6	10.9	1.4	2.0
X	R	1.4	0.4	18.9	20.4	75.2	72.8	4.5	6.4
	U	1.6	0.3	33.1	31.9	62.8	64.9	2.5	2.9

urban areas where manufacture of cotton textiles is a highly organised industry, employees predominate. Public administration and educational services employ a large number in urban areas.

Workers by occupational division. The occupational structure of the labour force and its distribution among industrial divisions has a direct bearing on the productive capacity of the labour force. With economic development, continuous large gains in the share of the professional, administrative and clerical groups of the labour force have been noted in the developed nations with a consequent decline in the occupational groups of farmers, fishermen and hunters. A feature peculiar to India is that in many of the occupations, specially in rural areas, caste plays an important role. A few selected castes predominate in certain occupations. In post-independence India, no information has been collected on caste (except scheduled castes and tribes). Further as a consequence of changing concepts of workers in different censuses, it is not possible to compare the occupation distribution over the years. The relevance of the above theory to Indian conditions has therefore, to be verified.

Table 86 shows the percentage distribution of workers in the ten major divisions of the national classification of occupations. Cultivators and agricultural labourers have been excluded from the table. The term 'farmers' under division 6 refers to farmers other than cultivators such as planters, livestock farmers, dairy farmers, poultry farmers, insect rearers, etc. The largest proportions of persons are in occupation divisions 7-8-9 "production and related workers, transport equipment operators and labourers". Their proportion is the same in rural and urban areas. Clerical and related workers, sales workers and service workers account each for about 10 per cent. In the former two occupations, the urban proportion is distinctly higher than the rural while in the case of service workers not much difference is noticed in the proportion in rural and urban areas. Understandably the proportion of farmers, fishermen and hunters is higher in rural areas. In divisions 0 to 5, women workers are in a higher proportion in urban areas compared with rural. The higher proportion of women under 0-1 (professional and related workers) is due to inclusion of teachers and nurses.

TABLE 86 : OCCUPATIONAL DISTRIBUTION OF WORKERS (1971)

Division	Description	Total workers			Female workers		
		Total	Rural	Urban	Total	Rural	Urban
	All Divisions	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100 00**
0-1	Professional, technical and related workers	8.88	9.61	8.23	13.73	8.60	20.83
2	Administrative, executive and managerial workers	2.26	1.22	3.19	0.34	0.16	0.59
3	Clerical and related workers	9.87	6.36	13.03	3.46	0.91	6.97
4	Sales workers	14.01	11.75	16.04	7.53	7.16	8.05
5	Service workers	10.54	10.19	10.86	15.36	12.55	19.23
6	Farmers, fishermen, hunters, loggers and related workers	7.72	14.07	2.01	12.31	19.17	2.85
7-8-9	Production and related workers, transport equipment operators and labourers	44.19	44.17	44.21	44.99	48.81	39.70
X	Workers not classified by occupations	2.53	2.63	2.43	2.28	2.64	1.78

Source : Estimated from one per cent sample data.

Workers classified by occupation and industry. Table 87 shows workers cross-classified by occupation and industry. In view of the specialisation required in certain industries, a few occupations are concentrated in specified groups. Thus about 88 per cent of the professional, technical and related workers are in 'other services' and about 95 per cent of the 'sales workers' are employed in 'trade and

TABLE 87 : OCCUPATIONAL DISTRIBUTION OF WORKERS BY DIVISIONS CROSS-CLASSIFIED BY THEIR INDUSTRIAL DISTRIBUTION ACCORDING TO CENSUS INDUSTRIAL CATEGORIES, ALL INDIA, 1971

Occupational Divisions	Description	Category of workers															
		III		IV		V(a)		V(b)		VI		VII		VIII		IX	
		C	U	C	U	C	U	C	U	C	U	C	U	C	U	C	U
0-1	Professional, technical & related workers	1.03	0.77	0.24	0.28	0.17	0.16	3.77	6.57	1.34	1.92	4.18	7.00	0.95	1.68	88.32	81.62
2	Administrative, executive & managerial workers	0.09	0.08	0.53	0.38	1.86	1.59	13.84	16.28	8.43	7.78	29.66	31.13	2.96	3.44	42.63	39.32
3	Clerical & related workers	1.41	0.96	0.67	0.49	0.14	0.08	10.40	12.17	1.80	1.68	16.07	18.76	19.45	19.77	50.06	46.09
4	Sales workers	0.97	0.54	0.04	0.01	0.21	0.13	2.60	3.11	0.03	0.03	95.27	95.13	0.17	0.21	0.71	0.84
5	Service workers	0.78	0.27	0.37	0.35	0.18	0.13	3.27	4.27	1.07	1.01	17.76	20.58	2.42	3.29	74.15	70.10
6	Farmers, fishermen, hunters, loggers & related workers	94.00	80.34	0.03	0.14	0.28	0.34	0.90	3.25	0.11	0.55	0.88	3.46	0.24	0.93	3.56	10.99
7-8-9	Production & related workers, transport equipment operators and labourers	0.40	0.21	3.27	2.11	24.82	12.43	39.68	48.91	7.69	6.76	1.75	2.30	11.39	15.24	11.00	12.04

Note : C—Rural & urban combined; U—Urban areas only.
Source : Census of India 1971, Part II Special.

commerce'. 'Administrative, executive and managerial workers' and clerical workers are mostly concentrated in 'manufacturing' (other than household industry) 'trade and commerce' and 'other services'. Except workers in occupational divisions 7-8-9, in the industrial category manufacturing (household and non-household industries), the rural-urban areas do not show much difference.

Participation rate in 1901—71. The information on employment has been collected from the earliest census though the data are not strictly comparable owing to conceptual differences (table 88).

TABLE 88 : WORKER PARTICIPATION RATE (1901-71)

Year	Percentage of workers to total population		
	Males	Females	Persons
1901	61.11	31.70	46.61
1911	61.90	33.73	48.07
1921	60.52	32.67	46.92
1931	58.27	27.63	43.30
1951	54.05	23.30	39.10
1961	57.12	27.96	42.98
1971	52.50	11.85	32.92

The participation rate revealed by the 1971 census is the lowest ever for both males and females, the fall being sharper in the latter case. Since comparison of 1961 and 1971 census results is of current interest it is discussed below.

As discussed earlier in the chapter, in the 1971 census each person was classified as worker or non-worker on the basis of his main activity, i.e., activity on which he spent most of his time. In the 1961 census, however, 'worker' was given a priority over 'non-worker'. Thus anyone contributing marginally to

economic activity was considered a worker in that census. It is, therefore, natural that there is a decline in the participation rates in the 1971 census when compared with 1961, this being accentuated in the case of females. What has surprised many is that even the absolute number of workers has gone down in 1971 compared with 1961. According to the 1961 census, there were 188.6 million workers, (129.1 million males and 59.5 million females). In 1971 while the number of male workers went up to 149.1 millions, only 31.3 million female workers were reported. Out of the reported fall of 28.2 million female workers, 27.5 million were in rural areas and only 0.7 million in urban areas.

Is the fall a real one or due to change in concept only or due to a mixture of both ? A sample survey was conducted after the 1971 census in which both the 1961 and 1971 census concepts of workers were used. A stratified two-stage design was adopted, the strata being rural, non-city urban and city in each state. A sample of blocks was selected in each state/union territory in the first stage and from within each selected block two sub-samples of houses were selected, all the odd numbered houses being one sub-sample and the even numbered houses the other. In a randomly selected sub-sample, named S_1, the 1971 census economic questions were canvassed. In the other sub-sample S_2, the 1961 census economic questions were canvassed. Two different sets of enumerators were trained in the respective concepts and utilised for canvassing the schedules. Table 89 compares the participation rates obtained from the survey with those revealed by the 1961 and 1971 censuses.

The participation rate according to S_1 was slightly higher compared with the 1971 census. This may partly be due to the fact that the survey was conducted in different seasons in different states of India, whereas the 1971 census related to 1 April. Since the rates are slightly higher for S_1, it is reasonable to assume that the rates based on S_2 would have been similarly lifted up only. Despite this possible

TABLE 89 : PARTICIPATION RATES BY SEX : CENSUS AND RESURVEY

	Rural			Urban			All areas		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
1971 concepts									
Census	53.46	13.09	33.81	48.82	6.61	29.33	52.50	11.85	32.92
Resurvey (S_1)	53.70	17.00	36.10	48.90	8.10	29.80	52.80	15.30	34.90
1961 concepts									
Census	58.18	31.39	45.04	52.40	11.08	33.48	57.12	27.96	42.98
Resurvey (S_2)	54.97	22.79	39.55	49.70	10.09	31.16	53.92	20.35	37.91

Source : Census of India, 1971—Paper 1 of 1974 ; Report on resurvey on economic questions.

upward lift in S_2, we find that there has been a decline in participation rates compared with 1961. This decline suggests that employment opportunities have not grown in step with population growth. During the 1961—70 decade, the country had to face two aggressions, one in 1962 and the other in 1965, which resulted in a steep rise in the defence budget, casting its shadow on the implementation of five-year plans. This retarded the economic growth rate considerably during the third five-year plan. Severe droughts in 1965-66 and 1966-67 affected agricultural production considerably. Since agriculture is the main livelihood for most of the people, the droughts severely strained the economy. The drought years were followed by a serious industrial recession during 1966-67 and 1967-68. As a consequence, the five-year plans had to be halted and, instead, annual plans were initiated during 1966-67, 1967-68 and 1968-69. This resulted in postponement of a number of projects in various sectors. It is, therefore, reasonable to conclude that all these adverse factors had affected the generation of additional employment needed to cope up with rapid population growth.

Secondary work. In addition to ascertaining the main activity, every person (worker or non-worker) was asked in the 1971 census whether he had any 'secondary activity'. If besides his main activity, any person participated in some other economic activity such as helping the household in several items of work, as in cultivation or in household industry or in looking after the cattle, in attending to family business, etc., but not to the extent as a full-time worker, such a participation was considered as his secondary work. Only about 5.32 million persons, about half of whom were females, reported any secondary activity at all. Of these 4.94 million persons were in rural areas. A cross-classification of persons by main and secondary activity revealed that among females, a large proportion of those reporting any secondary work were non-workers by main activity. In contrast, only a small proportion of male non-workers reported any secondary activity. Agricultural labour was the most important secondary activity for females. For males, non-household industry, trade, business or service provided secondary employment opportunities. While those males engaged in agriculture preferred non-household industry, trade, business or service for their secondary activity, those engaged in non-agricultural activities, whether household or non-household industry, preferred cultivation as their secondary work (table 90).

Non-workers. Table 91 presents non-workers classified into students, dependents and infants, those engaged in household work, retired persons, rentiers, beggars, vagrants, inmates of penal, mental and charitable institutions and 'others'. The group 'others' includes those who were 'looking for work' or were 'available for work'. Most of the male non-workers were either dependents and infants or full-time students. Most of the female non-workers were either looking after household duties, or dependents and infants. Further compared with females, a large number of males were declared as 'other non-workers' presumably because this class includes those 'looking for work'. About two-thirds of the males in this

TABLE 90 : PERCENTAGE DISTRIBUTION OF PERSONS BY SEX HAVING SECONDARY WORK, 1971 CENSUS

Main activity	Sector	No. of persons with secondary work (in 00's)		Percentage distribution by secondary work							
				Cultivators		Agricultural labourers		Household industry		Non-household industry, trade, business or service	
		Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
TOTAL	T	26,547	26,623	19.29	18.19	18.19	50.38	16.92	15.61	45.60	15.82
	R	24,691	24,757	19.38	19.33	19.05	52.93	17.55	14.04	44.02	13.70
	U	1,856	1,866	18.21	2.95	6.68	16.51	8.51	36.55	66.60	43.99
Cultivators	T	14,853	1,691	—	—	21.10	59.02	22.30	19.81	56.60	21.17
	R	14,427	1,667	—	—	21.58	59.09	22.69	19.92	55.73	20.99
	U	426	24	—	—	4.69	54.17	9.16	12.50	86.15	33.33
Agricultural labourers	T	2,660	955	14.51	18.43	—	—	25.71	33.09	59.78	48.48
	R	2,573	917	14.92	19.19	—	—	26.12	32.39	58.96	48.42
	U	87	38	2.30	—	—	—	13.79	50.00	83.91	50.00
Household industry	T	1,829	406	53.80	28.08	29.85	63.30	2.68	1.97	13.67	6.65
	R	1,735	393	55.16	28.50	30.32	63.87	2.54	1.53	11.98	6.10
	U	94	13	28.72	15.38	21.28	46.15	5.32	15.39	44.68	23.08
Non-household industry, trade, business or service	T	5,978	463	59.10	23.11	15.49	55.94	4.90	6.70	20.51	14.25
	R	5,032	408	64.25	25.74	16.81	57.60	4.49	5.64	14.45	11.02
	U	946	55	31.71	3.64	8.46	43.64	7.08	14.54	52.75	38.18
Non-workers	T	1,227	23,108	17.85	19.23	18.09	51.49	12.63	15.01	51.43	14.27
	R	924	21,372	22.73	20.55	23.59	54.44	12.99	13.18	40.69	11.83
	U	303	1,736	2.97	2.94	1.32	15.26	11.55	37.44	84.16	44.36

TABLE 91 : NON-WORKERS CLASSIFIED BY TYPE OF ACTIVITY

(in 00's)

Type of activity	Rural		Urban		Total	
	Males	Females	Males	Females	Males	Females
(i) Full-time students	294,931	116,101	135,501	90,543	430,432	206,644
(ii) Household duties	14,766	956,700	2,787	227,336	17,553	1,184,036
(iii) Dependents & infants	708,474	770,917	137,925	146,303	846,399	917,220
(iv) Retired, rentiers & persons of independent means	4,754	3,069	7,802	1,396	12,556	4,465
(v) Beggars, vagrants, etc.	3,313	2,038	1,379	715	4,692	2,753
(vi) Inmates of penal, mental & charitable institutions	464	175	998	197	1,462	372
(vii) Others	14,908	3,278	12,768	1,980	27,676	5,258
TOTAL	1,041,610	1,852,278	299,160	468,470	1,340,770	2,320,748

Source : Census of India 1971, Series 1—India, Paper 3 of 1972—Economic characteristics of population.

category were in age group 15-29, confirming that a large number of unemployed looking for work or available for work were included in this category. In view of the importance of this category in the present context of unemployment, the census provided a special tabulation by age and educational levels. Table 92 showing the percentage distribution of non-workers categorised as 'others' aged 15 and above by educational level in each age group, brings out clearly that a large proportion in this category at each age consists of educated persons. Among the literate, unemployment seems to increase with the educational level,

TABLE 92: PERCENTAGE DISTRIBUTION OF 'OTHER' NON-WORKERS AGED 15 AND ABOVE, BY SEX, AGE GROUP & EDUCATIONAL LEVEL—RURAL & URBAN (1971)

	Total			15—19		20—24		25—29		30+		Age not stated	
	Persons	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
						URBAN							
Illiterate	20.05	20.34	17.98	21.61	8.82	11.35	5.02	17.12	12.66	34.70	68.59	58.82	50.00
Literate without educational levels	6.78	7.27	3.24	9.30	4.16	4.52	1.51	6.88	1.90	9.40	5.78	5.88	—
Primary	15.70	16.71	8.44	23.49	15.48	12.81	3.52	12.53	5.70	17.50	5.42	—	—
Middle	22.57	23.93	12.78	26.19	16.47	27.10	12.90	22.17	12.02	17.46	5.05	11.77	—
Matriculation or higher secondary	26.51	24.57	40.49	18.53	51.08	33.06	46.06	28.18	35.44	16.22	8.30	17.65	50.00
Others	8.39	7.18	17.07	0.88	3.99	11.16	30.99	13.12	32.28	4.72	6.86	5.88	—
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
						RURAL							
Illiterate	26.57	22.75	47.41	23.11	29.01	10.08	15.44	16.59	31.03	50.69	93.58	58.62	71.43
Literate without educational levels	7.11	7.85	3.07	9.64	5.05	4.97	2.79	4.67	1.48	12.97	1.97	13.79	—
Primary	11.67	13.06	4.08	18.67	8.80	8.77	2.95	11.86	3.45	13.63	0.92	10.34	—
Middle	19.97	22.03	8.72	24.21	17.32	26.07	10.18	21.36	5.42	11.67	0.65	6.90	7.14
Matriculation or higher secondary	27.83	28.07	26.51	23.60	37.37	40.29	42.53	32.34	33.00	8.53	2.23	6.90	21.43
Others	6.85	6.24	10.21	0.77	2.45	9.82	26.11	13.18	25.62	2.51	0.65	3.45	—
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Another evidence of increasing unemployment among the educated is provided by the tabulation of information on a special card canvassed during the 1971 census for all graduates and holders of technical diplomas or certificates. The percentage of unemployed estimated from this source by subject fields is presented in table 93.

TABLE 93 : PERCENTAGE OF GRADUATES AND POST-GRADUATES SEEKING EMPLOYMENT

Subject	Graduates	Post-graduates
Agriculture	13.32	7.25
Veterinary science	6.71	1.47
Medicine	5.31	2.00
Engineering & technology	11.51	4.62
Science (other than the above)	19.18	10.05
Arts	15.10	10.36
Commerce	16.36	7.07

Source : Technical manpower bulletin—(CSIR) April 1972.

The data collected from the special cards suffer from under-coverage. As against an estimated 3.5 million graduates and post-graduates on the basis of the one per cent sample, only 2.2 million graduates or post-graduates filled up the form. The proportion of unemployed is seen to be high. Even graduates and post-graduates in subjects like medicine and engineering were unemployed. The average duration of unemployment, as reported at the time of census, varied from 12 months in case of doctorate degree holders to about 21 months in the case of certificate holders.

Information on unemployment as such was not collected in the Indian census. The category 'other non-workers' is a residual category of non-workers after classifying them into students engaged in household duties, dependents, etc.

A large number of unemployed persons might still have reported themselves as 'dependents' or in some other category in the absence of specific probing. According to the live registers of employment exchanges, there were 8.2 million job seekers as on December 31, 1973 (table 94). Roughly half were of the level of matriculation or above.

TABLE 94: NUMBER OF JOB SEEKERS ON LIVE REGISTER AS ON 31 DECEMBER, 1973

Educational level	Number
1. Below matric (including illiterate)	4,316,002
2. Matriculate	2,074,001
3. Higher secondary (including inter)	1,071,757
4. Graduate	688,968
5. Post-graduate	66,921
TOTAL	8,217,649

Source : Directorate general of employment and training.

Not all these were unemployed. A number of persons who are already employed, register with the exchanges in search of better employment. The live register data for last few years show a steep climb, indicating mounting unemployment specially among the educated.

6. POPULATION PROJECTIONS (1971—2001)

Population projection is fraught with hazards. The official projection made in 1958 by an expert committee set up by the Planning Commission fell short of the 1961 census population by nearly 8 million. Its revision made in 1964 and then reviewed in 1968 overshot the 1971 census population by as much as 14 million. Projections made by individuals and institutions have often met with a similar fate. Despite these uncertainties, the need for a set of projections of population has been increasingly felt over the years, particularly for planning purposes.

This chapter attempts only a projection of the total population of India by age and sex and its rural urban break-up. As the base line data are crucial in any projection, the current demographic situation is discussed first in some detail.

Current demographic situation. The population of India according to the latest census was 548 million on 1 April 1971. If adjusted to 1 March 1971 to be at par with the earlier censuses, it would be 547 million. This has resulted in an average annual geometric growth rate of 2.2 per cent for 1961-70 as against 1.9 per cent for the previous decade. The 1971 census count provides the starting point for the projections. Though the post-enumeration check (PEC) has revealed a net under-enumeration of 1.7 per cent in the 1971 census, no adjustment has been made for this, so as to keep the base population at par with the published census figures.

Under present conditions, SRS provides the most reliable estimates of the vital rates from an independent source for some of the years later to 1966. For the rural areas where the system was initiated in 1963-64, the birth rate was 39 per 1,000 population for each of the four years 1968-1971. The care with which this

dual record system is implemented in the field, taken along with the consistency of these rates consecutively for four years, justifies our confidence in the rural rate. In urban areas, the system was initiated on a large scale only in 1969. Leaving out this initial year as the time taken by the system to establish itself, the birth rates of 29.9 and 30.1 for the years 1970 and 1971 average to a rate of 29.9 for the calendar-year period 1970-71. Combining these rural and urban rates in the ratio 4 : 1 (ratio of rural to urban population) a first estimate of the birth rate for 1970-71 comes out as 37.2.

In spite of all the attention paid to data collection, the SRS experience has shown that there is some amount of unavoidable undercount of events. Though an all-out evaluation of SRS data has not yet been undertaken, a comparison of the relative performance of the different agencies employed in the rural areas made in several states suggests that possibly around five per cent of the events might have eluded enumeration. We may, therefore, stipulate arbitrarily that the birth rate and the death rate computed from SRS data would have to be inflated by about five per cent on an average to approximate to the true situation. On this basis the estimated true birth rate for the period 1970-71 (centred on 1970 for convenience) is 39.1.

The birth rate for the decade 1951-60 centred on 1956 as computed by the census actuary was 41.7. Assuming a linear trend in the yearly rates between 1956 and 1970, the birth rate for 1966 (the central year for the decade 1961-70) may be taken to be 39.9.

The SRS death rate for 1970 and 1971 is 17.3 and 16.4 for rural and 10.2 and 9.7 for urban areas. Subjecting these rates to the same treatment as in the case of the birth rate, in terms of combining rural and urban and adjusting for a possible undercount of five per cent, the death rate for 1970 is found to be 16.3. This, read along with the census actuary's rate of 22.8 for 1951-60 (centred on 1956) gives an estimated crude death rate of 18.2 for 1966.

In working out the life tables for the sexes for the decade 1961-70, a problem arose regarding the choice of the associated infant mortality rate (IMR). The SRS provides the rates for both rural and urban areas for the years 1970 and 1971 only. Combining the rural and urban figures in the proportion of 4 : 1, the pooled rates for the two years work out to be 123.4 and 122.6 for males and 117.2 and 115.6 for females. The rates for 1970 and 1971 were extended backward linearly to arrive at an IMR of 127 for males and 124 for females for the central year 1966 of the decade 1961-70. These values have been utilised in building up the provisional life tables for the decade 1961-70.

At the moment only the one per cent advance tabulation of the 1971 census provides the unsmoothed age data for 1971. For the present projections, the above age data were quickly smoothed by employing broadly the same method as adopted for the 1961 age data so as to bring out smoothed age data and life tables corresponding to the tables of the earlier census. The provisional life tables so built up gave an expectation of life at birth of 47 years for males and 45.1 years for females. These calculations show that from a level of 41.9 years for males and 40.6 years for females for the period 1951-60 (centred on 1956) the expectation of life at birth has increased only by about 5 years for males and 4.5 years for females in ten years.

With the birth rate of 39.9 for the decade 1961-70 (centred on 1966), the associated general fertility rate (GFR) works out to be around 185. The corresponding value of GFR for the decade 1951-60 (centred on 1956) is 195. In the projections built up here, the assumptions regarding trends in fertility have been based on a likely reductions in GFR.

There are reasons to believe that there had been practically no change in fertility upto 1966. In their calculations of the number of births prevented based on the performance statistics of the various family planning programmes, the

Department of family planning had estimated a figure of 0.5 million births averted during 1961—66 and 7.4 million for 1966 –1970. There could have been, therefore, little or no change in fertility upto 1966 and a modest decline in fertility could have materialised only during 1966-70. Though the 7.4 million births averted are roughly equivalent to a seven per cent decline in GFR, it seems reasonable to assume only a five per cent decline as the base line indicator which could allow for methodological uncertainties in the calculation of births averted. This goes well with a birth rate of 39.4 for mid-1968 and 41.7 for 1961-66.

With this background for purposes of the projections, we start with—(i) a provisional smoothed age distribution of the 1971 census drawn from the one per cent sample advance tabulation; (ii) a provisional life table for 1961—70 associated with the above age data; (iii) a GFR of 185 for the quinquennium 1966—70, centred on mid-1968, and (iv) a five per cent decline in GFR during 1966—70.

Assumptions. In the projection of the national population attempted here, we have been spared the problems of adjusting for migration. With international migration being of no significance in recent years and with prospects of large-scale migration slender under present conditions, only the possible future trends in fertility and mortality are considered here to facilitate a projection by the component method.

The provisional life tables have indicated that the annual increase in expectation of life at birth during 1961-70 has come out to be 0.5 year for males and 0.45 year for females, which is appreciably less than the optimistic figure of 0.9 year assumed for both the sexes in the official projections made in 1968.

It is also apparent from the provisional life tables for 1961-70 that the mortality rates for females in their reproductive age groups continued to be higher. The SRS data and the Model registration scheme (an experimental scheme to record the cause of death with the help of para-medical personnel) also show that the age

specific death rates and the percentage distribution of deaths are higher for females in the reproductive age groups. It appears rational to assume that the expectation of life at birth for females will increase at a faster rate compared with that of males in the years to come, so that the present differential will be more or less wiped out by AD 2001. With declining mortality an established fact and with scope for further improvement, it is certain that every step will continue to be taken to allow the decline to take its course. Consequently we have considered here only one set of assumptions for the future course of mortality with a faster increase in the expectation of life for females relative to males. The expected annual increase in expectation of life at birth for males and females for the future years are shown in table 95.

TABLE 95 : ASSUMED ANNUAL INCREASE (IN YEARS) IN EXPECTATION OF LIFE AT BIRTH DURING 1971-2001

	1971—80	1981—90	1991—2000
Males	0.5	0.4	0.2
Females	0.6	0.5	0.3

As the projection has been made quinquennially, the life tables for the various quinquennia have been projected as follows :—(i) Mortality level corresponding to each sex-age specific mortality rate of the basic 1961-70 life table was read off from the UN model life tables. (ii) The sex-age specific mortality for AD 2001 would conform to the UN pattern associated with the assumed expectation of life at birth for that year. (iii) Mortality levels for the intervening quinquennia would follow a linear trend compatible with the quantum of increase in expectation of life at birth in these quinquennia so that the projected life tables would conform to the related pre-assigned expectation of life at birth. (iv) The mortality level determined in (iii) above

would specify the survival ratio for each age in the appropriate UN model life table.

With fertility being the most unpredictable of the growth components, six different sets of assumptions are made to cover a fairly wide range of rate of decline in GFR. These have been classified, two by two, into three broad groups of low, medium and high to provide a possible range of population.

The background material for making the rough guesses about the likely trend in fertility upto 1981 has been drawn largely from the available information on family planning programmes. For example, we have taken into consideration the family planning targets that have already been set for the fifth five-year plan and the performance-target ratio for the past years built up from the data given in the publication of the Department of family planning, "Programme information 1971-72". It is observed that the average performance-target ratio is roughly 62 per cent over the past years. As stated earlier, there appears to be concomitantly a five per cent decline in GFR during 1966-71.

In building up the future course of fertility beyond 1971, one should take account of the fact that family planning programmes have become an integral part of the process of economic and social development in India. In this context it appears relevant to link up the sets of low projections with the family planning targets and the medium sets with possible performance. The high sets may then be derived from the medium by suitably adjusting for possible shortfall in performance. Beyond 1981, though the assumptions are highly conjectural, birth rates around 20, 25 and 30 by AD 2001 corresponding to low, medium, and high assumptions may not be unrealistic. With the death rate coming down to a level between 9-10, these assumptions point to an average annual growth rate in the range of one to two per cent by AD 2001.

It is also reasonable to expect that the rate of decline in fertility will gather

momentum. Accordingly the sets of assumptions conform to the pattern of a quinquennial percentage decline in GFR presented in table 96. For purposes of calculations, the GFR is centred on the middle of each quinquennium, i.e., at the mid-years 1968, 1973, 1978.... For example, speaking of high 2 assumption, the GFR of 185 centred at mid-1968 would go down by five per cent to 176 at mid-1973. These values of the projected GFRs can be seen in table 97.

TABLE 96 : 5-YEARLY PERCENTAGE DECLINE IN GFR FROM 1961-65 LEVEL FOR THE PERIOD 1971-2001

		1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000
High	1	10	10	5	5	2.5	2.5
High	2	5	10	5	5	2.5	2.5
Medium	1	10	15	10	10	2.5	2.5
Medium	2	10	10	10	10	5	5
Low	1	15	25	10	10	10	5
Low	2	15	20	10	10	10	5

The projected population of India according to the high, medium and low fertility assumptions and the related birth rate, death rate and other measures are presented in tables 97 and 98. Table 99 gives the percentage distribution of the projected population by broad age groups. The high and low sets of projections indicate the likely range of future population trend in India while the medium represents the most plausible course of population growth according to the authors' judgment. Of the six projections the three, namely, high-2, medium-2 and low-2, may be taken to provide the possible range of population for any discussion on specific issues regarding trends over the future, with medium-2 series as the working base.

The growth of urban population is dependent on three basic elements—the natural increase, net migration and net accretion or depletion due to re-classification of areas. The first component is the consequence of the natural biological

TABLE 97 : PROJECTED EXPECTATION OF LIFE AT BIRTH, GFR, BIRTH RATE AND DEATH RATE FOR INDIA (1971-2001)

Items		1966-70	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000
I. MORTALITY ASSUMPTIONS								
Expectation of life at birth	m	48.52	51.27	53.77	56.02	58.02	59.52	60.52
	f	46.55	49.55	52.55	55.30	57.80	59.80	61.30
II. FERTILITY ASSUMPTIONS								
GFR								
High-2		185	176	158	150	143	139	136
High-1		185	167	150	143	136	133	130
Medium-2		185	167	150	135	122	116	110
Medium-1		185	167	142	128	115	112	109
Low-2		185	157	126	113	102	92	87
Low-1		185	157	118	106	95	90	86
III. PROJECTED VITAL RATES								
High-2	b.r.	39.4	37.3	34.2	33.2	32.0	31.2	30.4
	d.r.	16.9	15.5	13.3	11.9	10.9	10.2	9.7
	g.r.	22.5	21.8	20.9	21.3	21.1	21.0	20.7
High-1	b.r.	39.4	35.6	32.9	32.1	30.9	30.2	29.3
	d.r.	16.9	15.2	13.2	11.9	10 9	10.2	9.8
	g.r.	22.5	20.4	19.7	20 2	20.0	20.0	19.5
Medium-2	b.r.	39.4	35.6	32.9	30.5	28.1	27.1	25.7
	d.r.	16.9	15.2	13.2	11.7	10.6	10.0	9.7
	g.r.	22.5	20.2	19.7	18.8	17.5	17.1	16.0
Medium-1	b.r.	39.4	35.6	31.2	29.2	27.0	26.5	25.7
	d.r.	16.9	15.2	13.0	11.6	10.6	10.1	9.8
	g.r.	22.5	20.4	18.2	17.6	16.4	16.4	15.9
Low-2	b.r.	39.4	33.6	28.1	26.5	24.7	22.5	21.1
	d.r.	16.9	15.0	12.6	11.4	10.6	10.0	9.8
	g.r.	22.5	18.6	15.5	15.1	14.1	12.5	11.3
Low-1	b.r.	39.4	33.6	26.5	25.1	23.4	22.3	20.9
	d.r.	16.9	15.0	12.5	11 2	10.5	9.8	9.4
	g.r.	22.5	18.6	14.0	13.9	12.9	12.5	11.5

TABLE 98 : PROJECTED POPULATION OF INDIA UNDER SIX ALTERNATIVE FERTILITY ASSUMPTIONS

Assumptions	Sex	Population (in millions)						
		1971	1976	1981	1986	1991	1996	2001
High-2	M	283.4	315.9	350.0	388.6	431.3	478.5	529.8
	F	263.6	293.4	327.5	365.0	406.3	452.2	502.3
	P	547.0	610.3	677.5	753.6	837.6	930.7	1,032.1
High-1	M	283.4	313.5	345.3	381.5	421.1	464.7	511.5
	F	263.6	292.1	322.9	358.1	396.6	439.1	484.8
	P	547.0	605.6	668.2	739.6	817.7	903.8	996.3
Medium-2	M	283.4	313.5	345.3	378.6	412.6	448.7	485.3
	F	263.6	292.1	322.9	355.4	388.6	423.9	460.1
	P	547.0	605.6	668.2	734.0	801.2	872.6	945.4
Medium-1	M	283.4	313.5	342.8	373.7	404.9	439.1	474.5
	F	263.6	292.1	320.5	350.8	381.3	414.7	449.8
	P	547.0	605.6	663.3	724.5	786.3	853.8	924.3
Low-2	M	283.4	310.8	335.3	361.1	387.1	411.4	434.5
	F	263.6	289.5	313.4	338.7	364.2	388.4	411.9
	P	547.0	600.3	648.7	699.8	751.3	799.8	846.4
Low-1	M	283.4	310.8	332.9	356.2	379.5	403.3	426.4
	F	263.6	289.5	311.0	334.1	357.0	380.8	404.2
	P	547.0	600.3	643.9	690.3	736.5	784.1	830.6

Note : High, medium & low sets represent a birth rate of around 30, 25 and 20 respectively. The figures relate to 1st March of the respective year.

TABLE 99 : PERCENTAGE DISTRIBUTION OF THE PROJECTED POPULATION OF INDIA UNDER DIFFERENT ASSUMPTIONS BY BROAD AGE GROUPS (1971-2001)

Assumptions	Age group	1971		1976		1981		1986		1991		1996		2001	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F
High-2	0—14	41.3	41.6	40.4	40.8	38.7	39.2	37.3	37.9	36.4	36.7	36.1	36.2	35.7	35.7
	15—59	53.4	53.2	50.3	54.0	55.7	55.5	56.8	56.5	57.3	57.3	57.3	57.3	57.4	57.3
	60+	5.3	5.2	5.3	5.2	5.6	5.3	5.9	5.6	6.3	6.0	6.6	6.5	6.9	7.0
High-1	0—14	41.3	41.6	39.9	40.3	37.9	38.9	36.1	36.7	35.3	35.7	35.1	35.3	34.7	34.8
	15—59	53.4	53.2	54.7	54.5	56.4	55.6	57.9	57.6	58.2	58.1	58.0	58.0	58.1	58.0
	60+	5.3	5.2	5.4	5.2	5.7	5.5	6.0	5.7	6.5	6.2	6.9	6.7	7.2	7.2
Medium-2	0—14	41.3	41.6	39.8	40.3	37.9	38.3	35.6	36.2	34.0	34.4	32.8	33.0	31.8	31.8
	15—59	53.4	53.2	54.8	54.5	56.4	56.3	58.3	58.0	59.4	59.3	60.1	60.1	60.6	60.6
	60+	5.3	5.2	5.4	5.2	5.7	5.4	6.1	5.8	6.6	6.3	7.1	6.9	7.6	7.6
Medium-1	0—14	41.3	41.6	39.9	40.3	37.4	37.9	34.8	35.4	32.8	33.2	31.9	32.0	31.2	31.2
	15—59	53.4	53.2	54.7	54.5	56.9	56.7	59.0	58.8	60.5	60.4	60.9	60.9	61.1	61.0
	60+	5.3	5.2	5.4	5.2	5.7	5.4	6.2	5.8	6.7	6.4	7.2	7.1	7.7	7.8
Low-2	0—14	41.3	41.6	39.4	39.8	36.0	36.5	32.5	33.1	30.3	30.7	29.0	29.2	27.7	27.7
	15—59	53.4	53.2	55.2	55.0	58.2	57.9	61.1	60.9	62.7	62.6	63.2	63.2	63.9	63.8
	60+	5.3	5.2	5.4	5.2	5.8	5.6	6.4	6.0	7.0	6.7	7.8	7.6	8.4	8.5
Low-1	0—14	41.3	41.6	39.4	39.8	35.5	36.0	31.6	32.1	28.9	29.3	28.2	28.3	27.4	27.4
	15—59	53.4	53.2	55.2	55.0	58.6	58.4	61.9	61.8	63.9	63.8	63.9	64.0	64.0	64.9
	60+	5.3	5.2	5.4	5.2	5.9	5.6	6.5	6.1	7.2	6.9	7.9	7.7	8.6	8.7

process ; the latter two factors depend heavily on future developments in the economic activities of the region. An intensive analysis of migration and economic patterns so as to set future trends is a stupendous task. In the urban projection considered here we have, therefore, eschewed the component method of projection and relied upon a relatively easier course of projecting the past trends in the proportion of urban to total population into the future. Though certain arbitrary assumptions have to be made regarding future trends in this proportion, this procedure often results in a fairly acceptable projection of urban population, at least in the short run. The projection of urban population for 1971 made in 1968 by projecting the past trend into the future gave an urban proportion of 19.93 for 1971 whereas the actual proportion according to the 1971 census count was 19.91.

When the 1951 urban population was adjusted for changes of definition, it was found that the proportion of urban to total population had progressed linearly by four points over the three census years 1951, 1961 and 1971. Since the growth of population is a continuous process, its trend can be represented mathematically by smooth curves, unless unforeseen events like wars, pestilence and large-scale migration precipitate aberrations. A number of such mathematical curves like straightline, logistic, exponential and Gompertz, are available for projection purposes. A choice is more or less subjective as there is no way of knowing whether one curve is superior to the other in absolute terms. Though a straightline trend may be quite relevant for a short period of ten years or so, it is not suitable for a long stretch since a straightline increases or decreases progressively without any limit. Further in a straightline trend, the rate of change is also uniform. Over a long period of years, this will not be representative of urban growth. In the case of the proportion of urban to total population, we have the constraint that it cannot exceed the value of 1, representing the situation of the

TABLE 100 : RURAL-URBAN BREAK-UP OF THE PROJECTED POPULATION 1971-2001 UNDER MEDIUM-2 FERTILITY ASSUMPTION

(in 000's)

		Persons	Males	Females
1971	T	546,953	283,409	263,544
	R	438,083	224,798	213,285
	U	108,870	58,611	50,259
1976	T	605,557	313,456	292,101
	R	477,603	244,824	232,779
	U	127,954	69,632	59,322
1981	T	668,225	345,314	322,911
	R	518,142	265,159	252,983
	U	150,083	80,155	69,928
1986	T	734,018	378,604	355,414
	R	558,221	285,139	273,082
	U	175,797	93,465	82,332
1991	T	801,191	412,616	388,575
	R	596,086	304,004	292,082
	U	205,105	108,612	96,493
1996	T	872,558	448,678	423,880
	R	633,215	322,446	310,769
	U	239,343	126,232	113,111
2001	T	945,384	485,320	460,064
	R	667,063	339,121	327,942
	U	278,321	146,199	132,122

entire population becoming urban. When the rate of growth is slow in the initial years as seen at present, it is reasonable to expect that it may pick up momentum and then level off slowly to the limiting value of 1. Arguing on these lines and after experimenting with different growth curves, it was found expedient to choose the logistic curve which fits in well with the constraints we have referred to earlier. As three points are enough to determine a logistic curve, the logistic passing through the three given points for 1951, 1961 and 1971 was first determined. With the trend over the period 1951 to 1971 being slow though steady, it is felt that in the coming years with progressive intensification of the development programmes and industrialisation, there will be greater scope for migratory movements with the growth and diversification of employment opportunities. To allow for this the logistic determined as above was suitably adjusted by inserting an additional constraint that roughly 90 per cent of the population would become urban by AD 2101. In projecting the urban population in this way the medium-2 projection of the total population of India has been taken as the base (table 100).

7. CONSEQUENCES OF POPULATION GROWTH

The discussion on population projections has pointed out that by the turn of the century the population of India would have reached about 945 million. This will mean, on an average, an absolute addition to the population of 13 million per annum which is roughly equal to the total population of Australia in 1970. The total additions in 30 years' time would exceed that of the population of entire Europe (excluding the USSR) of 1950. What are the consequences of this growth on economic development ? India has a population with a large base, is growing fast and has a high dependency ratio. The density of population is high. Another factor is the already low level of living with considerable unemployment and under-employment. The example of the demographic transition of Europe may not be repeated in India. When the western countries were developing, their population base was smaller. Their growth rate was nowhere near the two per cent per annum being currently experienced by India. Demographic transition in those countries followed the industrial revolution. Added to these, their peoples had the advantage of migration to less densely populated parts of the world like Australia and the Americas.

TABLE 101 : POPULATION IN WORKING AGE GROUP 15—59

Year	Males (in 000's)	Females (in 000's)	Percentage	
			Males	Females
1971	151,483	140,170	53.45	53.19
1976	172,534	159,117	54.85	54.47
1981	194,965	181,729	56.46	56.28
1986	220,717	206,240	58.30	58.03
1991	244,996	230,459	59.38	59.31
1996	269,565	254,727	60.08	60.09
2001	294,333	278,777	60.65	60.59

Labour force. Table 101 on the preceeding page presents the growth of population in the working age group 15-59. The population in the working age group will increase from about 291.6 million in 1971 to about 573.1 million in A.D. 2001, which is roughly around the 1973 total population. Assuming that child labour will be abolished and that the existing worker participation rate will be maintained (worker participation rate is defined as percentage of workers to total population) in age group 15 and above, the number of workers may be estimated as under (table 102).

TABLE 102 : EXPECTED NUMBER OF WORKERS IN AGE GROUP 15-59 AT THE 1971 WORKER PARTICIPATION RATE (IN MILLIONS)

Year	Males	Females	Total	Quinquennial growth rate
1971	141.2	28.4	169.6	—
1976	164.8	32.9	197.7	11.6
1981	186.7	37.6	224.3	11.3
1986	212.1	42.8	254.9	11.4
1991	230.8	48.2	285.0	11.2
1996	262.2	53.7	315.7	11.1
2001	287.9	59.3	347.2	11.0

Even to maintain employment at the present levels, about 175 million additional jobs have to be created in a short span of 30 years. Since most of the labour force continues to be in rural areas, this is likely to increase further the pressure on the agricultural sector. If employment in the non-agricultural sector continues to grow at the present rate, any large-scale transfer of labour force from agricultural to other sectors will be difficult.

The incidence of unemployment and under-employment being already heavy in the agricultural sector, specially among small farmers and agricultural workers, the scope for expansion of employ ment opportunities is limited at present, though a technological breakthrough may alter the situation by making small-hold-

ings economically viable and profitable. This possibility has been kept in mind by the Indian planning commission. The draft outline of the fifth plan lays emphasis on the effective redistribution of land, coupled with support in organisation, credit inputs, marketing and other extension facilities to small and other marginal farmers.

Information about the number of employees in all the public sector establishments and in private sector establishments employing 25 or more persons is collected quarterly by the Directorate general of employment and training. Table 103 presents employment in public and private sector establishments as in March of every year.

TABLE 103: EMPLOYMENT IN THE ORGANISED SECTOR OF INDIAN ECONOMY (1961–1973)

Year	Employment in millions			Percentage change		
	Private sector	Public sector	Total	Private sector	Public sector	Total
1961	5.04	7.05	12.09	—	—	—
1962	5.16	7.42	12.58	2.38	5.67	4.05
1963	5.45	7.95	13.40	5.62	7.14	6.51
1964	5.59	8.45	14.04	2.57	6.29	4.78
1965	6.04	8.96	15.00	8.05	5.69	6.84
1966	6.09	9.37	15.46	0.83	4.58	3.07
1967	5.99	9.63	15.62	—1.64	2.77	1.03
1968	5.81	9.80	15.61	—3.33	2.73	0.34
1969	5.87	10.10	15.97	1.03	3.06	2.31
1970	5.97	10.37	16.34	1.70	2.67	2.32
1971	6.01	10.73	16.74	0.67	3.47	2.45
1972	6.03	11.21	17.24	3.33	4.47	2.99
1973	6.10	11.98	18.08	1.16	6.87	4.87

Source : Employment market information—DGET.

Though the organised sector constitutes only a small proportion of the total employment, the figures give an idea of the employment generated in the organised sector and as such reflect the result of the investments made in successive five-year plans. Most of these investments have been in the capital-intensive industries essential for the development of our infra-structure. Their contribution to increasing employment has been limited. The creation of the necessary infra-structure may give an impetus to other consumer-oriented industries, specially in the small-scale sector, resulting in increased employment. As a short-term measure, encouragement is being given to a number of labour-intensive schemes so as to increase employment.

Education. The constitution of India provides for free and compulsory education upto age 15. Owing to various reasons like lack of funds, trained teachers and sufficient motivation on the part of the parents, this could not be achieved so far. Table 104 presents the population in age groups 6-10, 11-13, 14-16 and 17-22 (corresponding to different stages of education) and their growth over the years. Between 1971 and 2001, the population in age group 6-10 is expected to increase by 25.7 millions and in age group 11-13 by 17.7 millions. In relative terms the increases will be 135 per cent and 143 per cent compared to 1971. This increase will naturally affect the educational programme of the country.

The Planning commission has aimed that facilities will be provided for 97 per cent of the children in age group 6-10 and 47 per cent in age group 11-13 by the end of the fifth five-year plan (1979). In the sixth plan it is proposed to fulfil the constitutional obligation regarding free and compulsory education upto age 14. This will mean, on the basis of our projection, creation of additional facilities for about 22 millions in age-group 6-10 and about 34 millions in age group 11-13 by 1986. The figures will rise to 35 millions and 41 millions respectively by the turn of the century. In view of the present enrolment figures for girls, more effort will have to be put in to bring them to school which may require a basic change in the

TABLE 104 : PROJECTED POPULATION BY SEX IN AGE-GROUPS CORRESPONDING TO DIFFERENT STAGES OF EDUCATION 1971—2001

(MEDIUM 2) (in 000's)

	1971			1976			1981			1986		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
6—10	37,696	35,406	73,102	41,571	38,709	80,280	42,417	40,173	82,590	44,090	42,056	86,146
11—13	20,057	18,895	38,152	22,888	21,523	44,411	25,115	23,151	48,466	25,241	24,105	49,346
14—16	17,829	16,926	34,755	20,823	19,626	40,449	23,447	21,973	45,420	24,973	23,436	48,409
17—22	30,823	29,647	60,470	35,247	34,377	70,624	42,092	39,682	81,774	47,111	44,072	91,183

	1991			1996			2001		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
6—10	46,136	43,893	90,029	47,835	45,376	93,211	50,742	48,036	98,778
11—13	26,492	25,247	51,739	27,730	26,350	54,080	28,706	27,195	55,901
14—16	25,488	24,319	49,807	26,737	25,443	52,180	27,887	26,458	54,345
17—22	49,465	46,621	96,086	50,877	48,503	99,380	53,356	50,725	104,081

social attitude towards girls' education. Yet another obstacle is the fact that many children who are admitted to school leave before completing schooling. It has been estimated that at present 60 per cent of the children drop out before 4 to 5 years of schooling, resulting in waste of scarce resources. Thus in addition to school facilities, we may have to provide other inducements like meals, dress and books. At the secondary and university level, the problem is one of finances as well as suitably reorienting the content of education to the social and economic needs of the country. More than merely expanding the number, emphasis has to be laid on improvement of the quality of teaching and facilities like libraries and laboratories.

These problems are receiving constant attention. However, the question of educational development is complicated by the fact that the available limited resources have to be allocated to pressing immediate needs like food, clothing and industrial development. Though education is more productive than any other form of investment, its impact is indirect and is felt only in the long run. If we are to attain the cherished goal of universal education in the near future, then emphasis would have to be laid on development of less expensive methods and vocationalisation of the educational curriculum.

Housing. Information on housing is extremly deficient in India. Though census collects certain data on housing as part of the houselisting operation, this does not provide any insight in matters like age of the house, the facilities available therein, additions to the stock, etc. A rough calculation on the future needs has been attempted on the basis of the data collected in the 1971 census. These calculations may be sufficient to draw attention to the grave nature of the problem.

According to the 1970 houselist, there were about 97 million households in India, (77.9 millions in rural and 19.1 millions in urban areas). If we assume that each household should have a separate dwelling, we may require as many houses for residential purposes. As against the requirement, about 71.9 million and 17.7

million residential units were available in 1970 —a shortage of about 6.0 million houses in rural and 1.4 million houses in urban areas. This, however, is likely to be a gross under-estimate as not all these census houses are units fit for human living. A cross-classification of residential houses by material of the wall and of the roof reflects the extent of the poor housing in India (table 105).

TABLE 105 : PERCENTAGE DISTRIBUTION OF RESIDENTIAL CENSUS HOUSES BY MATERIAL OF WALL AND MATERIAL OF ROOF

Material of wall and roof	Rural	Urban	Total
(1) Grass leave, bamboo, etc., mud, unburnt brick wall with grass, leave, reeds, etc., as material of roof	43.58 (31.3)	12.74 (2.3)	37.44 (33.6)
(2) Grass, leave, bamboo, mud, unburnt brick, wall with tiles, slates, shingle, corrugated iron, etc., as material of roof	29.60 (21.3)	15.63 (2.8)	26.82 (24.1)
(3) Burnt bricks, C.I. sheets and other metal sheets, stone, cement, etc., as material of wall with grass, leaves, reeds, etc., as material of roof	7.90 (5.7)	7.59 (1.3)	7.84 (7.0)
(4) Burnt bricks, C.I. sheets or other metal sheets, stone, cement, etc., as material of wall with tiles, slates, shingle C.I. etc., as material of roof	18.92 (13.6)	64.04 (11.3)	27.90 (24.9)
TOTAL	100.00 (71.9)	100.00 (17.7)	100.00 (89.6)

Source :—Census H-II table. (a) In calculating the percentages all 'other material & material not stated' have been omitted. (b) Figures in bracket are the estimated number of purely residential houses in millions.

These relate to residential houses, including those which are used as shop-cum-residence, workshop-cum-residence etc. The table also presents the estimated number of houses used purely for residential purposes, using the above percentages. Almost all the houses in category I are either dilapidated or improvised structures which would require replacement. The estimate of housing shortage in 1970, therefore, swells up to a figure of 37.3 million in rural areas and 3.7 million in urban areas. No reliable information is available on the number of houses added annually. It, therefore, becomes difficult to estimate the likely shortages in future years. The future requirements can, however, be roughly estimated (table 106), if we assume that the average household size would remain the same as observed in the 1970 houselisting (5.61 in rural areas and 5.49 in urban areas).

TABLE 105 : ESTIMATED NUMBER OF HOUSEHOLDS IN RURAL & URBAN AREAS (1976—2001)

(in '000)

Year	Projected population		Estimated number of households		
	Rural	Urban	Rural	Urban	Total
1976	477,603	127,954	85,134	23,307	108,441
1981	518,142	150,083	92,360	27,338	119,698
1986	558,221	175,797	99,505	32,021	131,526
1991	596,086	205,105	106,254	37,360	143,614
1996	633,215	239,343	112,873	43,596	156,469
2001	667,063	278,321	118,906	50,696	169,602

The impact of family planning programmes and consequent small family norms may push up the requirement further. In any case the requirement is likely to increase on an average at the rate of about 2.4 million housing units over the 25 years —1976-2001.

As against this growing demand for houses, the constraints on supply are many. Most of the economically weaker sections who are in dire need of residential accommodation do not even own their house sites. The existing low levels of income make it difficult for them to take advantage of even subsidised housing

schemes. A further handicap at the moment is the scarcity of building materials to support a massive programme. Adequate housing for all may, it appears, remain a dream for years to come.

Food. Food output in India almost doubled between 1950-51 and 1970-71. But such has been the growth of its population that the annual per capita availability of domestically produced foodgrains (excluding imports) rose only from 143 kg to 201 kg in the same period. The increase in production was marked in wheat and fairly substantial in rice (table 107). Output of pulses and oilseeds did not reflect this growing trend. Yet the supply of foodgrains has been barely sustained to meet the needs of the people. The Indian population had risen from 361 million in 1951 to 548 million in 1971. When the monsoon plays truant, the country has to import food. While the scope for bringing more area under cultivation is limited, it is feasible to add to the irrigated area and take to better management practices. The impetus given by the "green revolution" which transformed wheat output in Punjab, Haryana and western Uttar Pradesh has to be sustained and it is likely that rice may also benefit from research activity now going on. The steady increase in the consumption of fertiliser from 58,000 tonnes of nitrogen in 1952-53 to 1.8 million tonnes in 1972-73 is indicative of the farmers' readiness to change over from traditional practices. Wider use of fertiliser, improved high-yielding varieties of seed and more efficient water and soil management may help India solve her food problem in the coming years.

POPULATION POLICY

Though the growth of population is affected by both births and deaths, all are agreed that deaths should be reduced by the maximum possible extent. In India, steps have been taken to reduce the incidence of infectious diseases like cholera, plague, smallpox and malaria. Subject to the availability of financial and material resources, a number of schemes for improved sanitation and drinking water facilities have also been undertaken, in addition to various health schemes.

TABLE 107 : PRODUCTION ('000 TONNES) AND YIELD /HECTARE (KG) OF SELECTED CROPS

Year	Rice		Wheat		All cereals		Pulses		Total foodgrains		Annual per capita domestic availability
	P	Y	P	Y	P	Y	P	Y	P	Y	
1951-52	21,300	714	6,183	653	43,576	557	8,420	448	51,996	536	143.1
52-53	22,899	764	7,501	763	50,012	608	9,189	463	59,201	580	160.1
53-54	28,214	902	8,017	750	59,203	678	10,618	489	69,821	640	185.4
54-55	25,219	820	9,043	803	57,085	664	10,950	500	68,035	631	99.2
55-56	27,557	874	8,760	708	55,805	639	11,045	476	66,850	605	171.0
56-57	29,037	900	9,403	695	58,304	664	11,551	495	69,855	629	175.2
57-58	25,525	790	7,998	682	54,749	630	9,562	424	64,311	587	158.1
58-59	30,847	930	9,958	789	63,992	707	13,149	541	77,141	672	185.8
59-60	31,676	937	10,324	772	64,873	713	11,799	450	76,672	662	180.9
60-61	34,574	1,013	10,997	851	69,314	753	12,704	539	82,018	710	189.4
61-62	35,663	1,028	12,072	890	70,951	763	11,755	485	82,706	705	187.0
62-63	33,217	931	10,776	793	68,623	733	11,528	475	80,151	680	177.2
63-64	36,998	1,033	9,853	730	70,569	757	10,073	416	80,642	687	174.5
64-65	39,308	1,078	12,257	913	76,939	816	12,417	520	89,356	757	189.3
65-66	30,589	862	10,394	827	62,403	675	9,944	438	72,347	629	149.9
66-67	30,438	863	11,393	887	65,884	707	8,347	377	74,231	644	150.5
67-68	37,612	1,032	16,540	1,103	82,950	840	12,102	534	95,052	783	188.5
68-69	39,761	1,078	18,651	1,169	83,595	843	10,418	490	94,013	781	182.4
69-70	40,430	1,073	20,093	1,209	87,810	865	11,691	531	99,501	805	188.8
70-71	42,225	1,123	23,832	1,307	96,604	949	11,818	524	108,422	872	201.2
71-72	42,735	1,145	26,477	1,382	93,598	936	11,058	499	104,656	856	190.0

Source: Estimates of area and production of principal crops of India (1971-72). Directorate of economics and statistics.

Not many governments have, however, a clear-cut policy in respect of births. The Government of India was among the pioneers in the world to accept in the early 1950's the need for checking population growth and advocating family planning as part of its economic plan. In a surprisingly short span of 25 years since then, a large number of countries have adopted population policy as part of their development effort.

Since the early 1920's family planning has been advocated in India by a number of intellectuals and social reformers on grounds of maternal health as well as economic uplift of the poor. In 1930 the first government-operated family planning clinic was established in Mysore, followed soon in 1932 by one in Madras presidency. The sharp increase in population during the decade 1921-31 attracted attention and the need for family planning was emphasised by the elite. The All-India women's conference in 1932 at its meeting in Lucknow vigorously pleaded for family planning education. The national planning committee set up by the Indian National Congress with Jawaharlal Nehru as chairman, recommended in 1940 that "in the interests of social economy, family happiness and national planning, family planning and limitation of children are essential and the state should adopt a policy to encourage these. It is desirable to lay stress on self-control, as well as to spread knowledge of cheap and safe methods of birth control". The Planning commission, set up in 1950, while preparing the outline of the first five-year plan took note of the increasing trend of population during the previous decades and warned that "unless measures are initiated at this stage to bring down the birth rate, thereby to reduce the rate of population growth, a continuously increasing amount of effort on the part of the community will be used up only in maintaining existing standards of consumption. Increasing pressure of population on natural resources (which must be limited) retards economic progress and limits seriously the rate of extension of social services so essential for civilised existence".

At the outset family planning was advocated more as a step to improve the health of the mother undermined by frequent child-birth under conditions of poverty and malnutrition. The plan stressed education of the public on the need for family limitation. Facilities were provided for those who sought family planning on a voluntary basis. At the same time, encouragement was given for the collection, study and dissemination of information on various social and biological aspects of family planning. Assistance was provided for about 115 family planning clinics and 19 research schemes relating to biological and demographic problems. It was decided that the state should provide facilities for sterilisation and for giving advice on contraception on medical grounds.

With the base laid in the first five-year plan, efforts were made to augment the programme in a big way in the second five-year plan. A family planning board was established in the Health ministry. Training in family planning was made compulsory for under-graduate medical students, nurses, health workers and others. A number of medical and biological research studies were undertaken, paving the way for a study of the population and factors affecting its growth. It was proposed to establish a large number of clinics (one for every 50,000 population) in cities and bigger towns. In rural areas, a beginning was made by establishing family planning clinics in association with primary health centres. A sum of Rs. 21.56 million was spent during the second plan as against Rs. 1.45 million during the first plan. The number of clinics rose to 549 in urban areas and 1,100 in rural areas. In addition, family planning advice was given in a large number of health centres in rural and urban areas. A large number of sterilisation centres were set up with qualified doctors. Considering the shortage of trained medical personnel and the lack of basic health amenities, the setting up of so many family planning clinics was indeed an achievement. Among the important studies brought out during the period, mention must be made of the India-Harvard Ludhiana population study and the studies undertaken at Ramnagaram in Mysore, Lodhi Colony in New Delhi, and Singur in Calcutta.

Despite the efforts made in the first two plans, the population continued to grow at a rapid pace. The release of the 1961 census figures showed that the population had been growing at a considerably higher rate than expected and that intensive efforts would have to be made to control it. It was felt that the 'clinical approach' in which people were expected to visit the 'clinics' for advice adopted in the previous two plans had reached only a relatively small fraction of the people. While awareness of the family planning techniques had increased, practice lagged behind. To reach the masses, specially in rural areas, it was necessary that more people were motivated to the ideal of a small family norm. The 'clinical approach' gave place to the 'extension approach' in which an extensive campaign was launched through mass media, individual contacts and community group efforts to motivate persons to adopt family planning and the small family norm. Since attitudes on family planning are greatly influenced by social leaders, a large number of orientation camps for educating village leaders and panchayat members were held. A variety of contraceptives were manufactured indigenously and distributed to voluntary organisations and medical personnel. A large number of mobile units were provided for in which medical personnel could move freely about in rural areas. To meet these expending needs, Rs. 270 million were provided in the third plan against Rs. 21.56 million spent in the second plan. The actual expenditure was Rs. 248.60 million.

Major changes were made at the organisational level at the centre and in the states during this period. To reflect fully the importance of family planning at the national level, the ministry of Health was re-designated as the ministry of Health & Family Planning, with a separate department of Family planning. To improve co-ordination with state governments, a commissioner for family planning and regional directors were appointed. To advise the government on technical matters, a central family planning institute was created as an autonomous organisation.

One significant development during this plan was the setting up of a time-bound target in terms of reduction in birth rate. The object of the family planning programme was defined as reducing the birth rate to 25 per thousand population by 1973. The operational goals were spelt out. It was proposed to create facilities for the married population during their reproductive period for the adoption of family planning by bringing out (i) group acceptance of small family norms, (ii) personal knowledge about family planning methods and (iii) ready availability of supplies and services. Yet another development was the introduction of the intra-uterine device (IUD) during the last year of the plan.

Though owing to unusually difficult economic conditions, the fourth five-year plan had to be postponed for three years, family planning was given the highest priority during these years. The infra-structure in the form of primary health centres, family welfare centres, training institutions and motivation programmes was strengthened considerably. The IUD programme introduced in 1965 had a phenomenal success during these years raising hopes for the future. Acceptance of other contraceptive devices had also shown a marked upward rise. The stage was set at the beginning of the fourth plan in 1969 for vigorous promotion of family planning.

The persistent low levels of living of most of the population, despite three five-year plans and the pressure of the growing population were evident to the Planning commission when it called for a 'nationwide appreciation of the urgency and gravity of the situation'. A strong, purposeful government policy supported by effective programme and adequate resources of finance, men and materials was considered 'an essential condition of success'. A sum of Rs 3,300 million was provided for various programmes. To induce group acceptance, mass vasectomy camps with higher compensation were organised in each state, first on an experimental basis during 1971-72 and as part of the normal programme in 1972-73. These camps attracted a large number of acceptors. In 1972-73, over two million

persons were sterilised in such camps, constituting about 83 per cent of the total number sterilised. It was felt, however, that these efforts were at the cost of normal family planning efforts and should, therefore, be pursued with caution. During this period, the IUD programme, which had shown promise earlier, received a setback owing to various factors like the lack of trained lady doctors, reluctance of acceptors due to side effects, as well as rumours of complications. The sale of conventional contraceptives on the other hand picked up.

The medical termination of pregnancy act was passed in 1971 and came into force on 1 April 1972. The act provided that a pregnancy might be terminated by a registered medical practitioner (a) where the length of the pregnancy did not exceed twelve weeks if a medical practitioner was of the opinion, formed in good faith that/or (b) where the length of pregnancy exceeded twelve weeks but did not exceed twenty weeks, if not less than two medical practitioners were of the opinion, formed in good faith, that—(i) the continuance of the pregnancy would involve a risk to the life of the pregnant woman or grave injury to her physical or mental health; or (ii) there was a substantial risk that if the child was born, it would suffer from such physical or mental abnormalities as to be seriously handicapped.

Though the act has been promulgated on medical and health grounds, it is hoped that it will benefit family planning efforts considerably by terminating unwanted pregnancies due to contraceptive failures.

Numerous studies have indicated that one of the important reasons for high fertility in India is the heavy infant and child mortality and the consequent fear of insecurity at old age felt by many of the parents. Any family planning programme is likely to be more successful when the couple are convinced that effective steps are being taken to reduce the risk of infant deaths. This is possible only when maternity and child health services are integrated with the family planning programme. Notable progress was made in this direction during the

fourth plan. The scheme for immunisation of infants and pre-school-age children against diphtheria, whooping cough and tetanus, immunisation of expectant mothers against tetanus, prophylaxis against nutritional anaemia for mothers and children and nutritional programmes for control of blindness caused by vitamin-A deficiency were implemented through the family planning centres.

Despite the efforts made in successive plans, evaluation has indicated that the country has miles to go before reaching the desired object of reducing the birth rate to 25 per 1000. In the fifth five-year plan (1974—79) in addition to augmenting the existing facilities, it is proposed to lay greater emphasis on the quality of acceptors. To maximise the demographic effect, family planning efforts are proposed to be concentrated on couples with a younger age structure. To implement the various schemes of family welfare programme, an outlay of Rs. 5,160 million has been proposed.

Achievement of family planning programme. Family planning is being increasingly accepted by more and more people. As against a negligible 7,156 sterilisations performed in 1956, about 3.1 million sterilisations were reported in 1972-73. It has been estimated that about 2.3 million people had taken to the use of conventional contraceptives. As mentioned earlier, the IUD programme which during 1966-67 attracted 0.91 million acceptors had a setback and in 1972-73 only 0.35 million women had IUD insertions. Since the start of the family planning schemes in 1956, about 11.1 million vasectomies and 2.8 million tubectomies have been performed. Since its inception in 1965, about 4.6 million IUDs have been inserted (table 108).

Though the programme has undoubtedly attracted more and more acceptors, these fell short of expectations. Table 109 giving the targets and achievements indicates that while 70 per cent of the target was achieved in the case of sterilisations, only 39 and 48 per cent of targets could be achieved in respect of IUD's and conventional contraceptives.

TABLE 108 : NUMBER OF ACCEPTORS OF VARIOUS METHODS AND NUMBER OF EQUIVALENT STERILISATIONS (1956—73)

Year	Vasectomy	Tubectomy	Sterilisation	IUD insertions	Conventional contraceptive	Total acceptors	Equivalent sterilisations
1956	2,395	4,758	7,153			7,153	7,153
1957	4,152	9,584	13,736			13,736	13,736
1958	9,189	15,959	25,148			25,148	25,148
1959	17,633	24,669	42,302			42,302	42,302
1960	37,596	26,742	64,338			64,338	64,338
1961	63,880	40,705	104,585			104,585	104,585
1962	112,357	45,590	157,947			157,947	157,947
1963	114,621	55,625	170,246		297,613	467,859	206,821
1964	201,171	68,394	269,565		438,903	708,468	306,140
1965-66	576,609	94,214	670,823	812,713	582,141	2,065,677	990,239
1966-67	785,378	101,990	887,368	909,726	464,605	2,261,699	1,229,329
1967-68	1,648,152	191,659	1,839,811	668,979	475,236	2,984,026	2,102,407
1968-69	1,383,053	281,764	1,664,817	478,731	960,896	3,104,444	1,904,469
1969-70	1,055,860	366,258	1,422,118	458,726	1,509,378	3,390,222	1,700,809
1970-71	878,800	451,114	1,329,914	475,848	1,962,347	3,768,109	1,652,059
1971-72	1,620,076	567,260	2,187,336	488,368	2,353,503	5,029,207	2,546,250
1972-73	2,611,631	504,731	3,116,362	353,162	2,316,506	5,786,030	3,427,125

Notes : Equivalent sterilisations have been calculated by adding the number of sterilisations, 1/3 of IUD insertions and 1/12 of equivalent conventional contraceptive users. Upto 1964, it was the calendar year. From 1966-67, it is the financial year April-March. Data for 1972-73 are provisional.

Source : Family welfare planning in India (1972-73), Department of family planning.

TABLE : 109 TARGETS (T) ACHIEVEMENTS (A) AND PERCENTAGE OF ACHIEVEMENTS (A%) IN STERILISATIONS, ETC.

Year	Sterilisations			IUD insertions			CC users		
	T	A	A%	T	A	A%	T	A	A%
1966-67	1,253,354	887,368	70.2	4,198,797	909,726	21.7	2,308,272	464,605	20.1
1967-68	1,542,933	1,839,811	119.2	2,057,244	668,979	32.5	2,057,244	475,236	23.1
1968-69	2,108,543	1,664,817	79.0	790,716	478,731	60.5	2,108,543	960,896	45.6
1969-70	2,215,283	1,422,118	64.2	70,240	458,726	65.3	2,431,409	1,509,378	62.1
1970-71	2,600,000	1,329,914	51.2	900,000	457,848	52.9	4,800,000	1,962,347	40.9
1971-72	2,078,592	2,187,336	105.2	830,973	488,368	58.8	3,829,000	2,353,503	61.5
1972-73	5,697,070	3,116,362	54.7	949,240	353,162	37.2	4,257,500	2,316,506	54.5
1966-73	17,495,774	12,447,726	71.2	9,797,410	3,815,540	38.9	20,791,968	10,042,471	48.3

1972-73 figures of achievements are provisional.

Source : Family welfare planning in India (1972-73). Department of family planning.

Since the latter methods are the most suited to those young couples who are in the process of building up their families, the shortfall is likely to have a much more demographic impact on births. Another factor which needs attention is the preponderance of male contraceptives, revealed by the statistics of the total sterilisations. Since 1966, only about 20 per cent were tubectomies. Again among the conventional contraceptives, condoms are by far the most important ones. Since female contraceptive methods are equally important, it has been proposed in the fifth five-year plan that greater emphasis be laid on female-oriented methods.

A welcome feature of India's family planning efforts is its general acceptance in rural areas also. During 1966-67 to 1971-72, about 60 per cent of the sterilisations and IUD insertions were made in rural areas.

An analysis of the performance by different states indicates that Andhra Pradesh, Gujarat, Haryana, Kerala, Maharashtra, Orissa, Punjab, Tamil Nadu and Pondicherry have made significant progress. In some of the major states like Assam, Bihar, Jammu & Kashmir, Rajasthan and Uttar Pradesh, progress has been tardy. Even among the states of the former category, there are some districts where performance has fallen short of targets. A study was carried out by the International institute of population studies, Bombay, on the performance of family planning. It revealed that less than one per cent of the districts exceeded the targets of sterilisation and IUD and nine per cent of the districts achieved 75 per cent of the target during 1967-68, 1968-69 and 1969-70. About two-thirds of the districts could not achieve even half the target. An analysis of the factors responsible for the non-fulfilment of targets indicated that in addition to general illiteracy and low levels of living, lack of trained medical and para-medical persons in many family planning clinics, specially in rural areas, was a contributory factor.

Impact. On the basis of the available information the Department of family planning has estimated that as a result of various methods adopted upto March

1973, about 15 per cent of the couples in the reproductive age group have been protected. Of these 11.3 per cent have been protected by sterilisation, 1.4 per cent by IUD and another 2.3 per cent by CCs. In the absence of the age distribution of the contraceptors any measurement of the impact of the programme on birth rate can only be approximate. The following table presents the estimated number of births averted due to contraception. Major limitations of the estimates presented are the absence of reliable field studies on the regularity and frequency of the use of conventional contraceptives and the age structure of the couple adopting contraception. Despite this, a clear progressive trend in the births averted is seen. A large share of the births averted is due to sterilisation.

TABLE 110 : NUMBER OF BIRTHS AVERTED DUE TO VARIOUS METHODS OF FAMILY PLANNING

Year	Births averted (in millions)				
	Sterilisation	IUD	C.C.	Total	Cumulative Total
1961	0.0321	—	—	0.0321	0.0321
1962	0.0531	—	—	0.0531	0.0852
1963	0.0855	—	—	0.0855	0.1707
1964	0.1235	—	—	0.1235	0.2942
1965	0.2005	0.0066	0.0023	0.2094	0.5036
1966-67	0.3153	0.1552	0.0539	0.5244	1.0280
1967-68	0.4962	0.3246	0.0774	0.8982	1.9262
1968-69	0.8472	0.4412	0.1287	1.4171	3.3433
1969-70	1.2162	0.4938	0.1483	1.8583	5.2016
1970-71	1.5178	0.5090	0.2123	2.2391	7.4417
1971-72	1.7672	0.5004	0.2947	2.5623	10.0030
1972-73	2.1380	0.4874	0.3385	2.9639	12.9669

Notes : As a result of work done up to March, 1973 since inception of the programme, a total of 40 million births will be eventually averted by 1994-95.

Source: Family welfare planning in India, (1972-73) Department of family planning.

Though the achievements have fallen short of the efforts put forth, there can be no doubt that a number of persons are getting attuned to the small family norm. Barriers like social customs, taboos and social restrictions are being removed. Knowledge about the physiology of reproduction and family planning is spreading fast. These have raised the hope that the country will solve in the not too distant a future, the problem of population explosion.