



ECONOMIC IMPACT OF INDIA'S FAMILY PLANNING PROGRAMME ON SCHOOL AGE POPULATION DURING 1971-1991

BY
O. P. VIG

INTERNATIONAL INSTITUTE FOR POPULATION STUDIES
DEONAR, BOMBAY-400088.

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The increase in school enrolment is mainly due to two reasons.

The first is the absorption by the school system of children who at one time would not have attended school. This happens in various circumstances, the most important being the implementation of the system of compulsory education in India since 1950. Its introduction in practice is of course a gradual process, so that over a period of years school roll increases until eventually all children within the age range defined by the statute start attending school.

The second cause of increase in school enrolment is due to increase in the size of those age groups in the general population from which the school population is drawn.

Increase in total enrolment may be temporary due to introduction of compulsory education system or permanent due to demographic factors when considered over a fairly long period of years; but in either case the implications for the educational administrators are the same—to plan for sufficient number of educational institutions to cater to the maximum number of pupils at any given time. Such plans will include school building programmes, measures for training enough teachers, provision of all kinds

of school equipment, text books and other teaching aids, arrangements for examinations, inspections, maintenance of school buildings, and so forth.

The making of enrolment projections of the school population depends on trends of change in the size and age-composition of the population of the country. For the past several decades, the population of India has remained quasi-stable, with unchanging fertility and declining mortality resulting in a fixed age distribution.¹ As a result, the school-age population in the age-group 6-17 years has remained about 28 per cent of the total population during the last several decades. Due to unchanging fertility and declining mortality, the population of India has continued to grow faster during each successive decade.

The Government of India realised the gravity of the situation and enunciated the Family Planning Policy in 1952. Since then the programme has been made a part of the developmental plans of the country. During the past two decades, the programme has passed through diverse facets of organisation, planning, implementation and strategy to come to the present mass movement characterised by liberal incentives, intensive campaigns and concentrated efforts. According to the latest declaration of the Government of India,² the goal of the Family Planning Programme is to reduce the

1. Vig, O.P., "A Study of Population Dynamics of India 1901-1971, Through Stable Population Technique", Ph.D. Thesis, submitted to Delhi University, Delhi, 1969, p.50 (unpublished).

2. Government of India; "Report of the Family Planning Target Deptt. of Family Planning, Setting Committee", 1971, p.8 (mimeographed).

birth rate to 25 per 1000 population by the end of the Fifth Year Plan or 2 years thereafter i.e. by 1980-81.

The successful implementation of the Family Planning Programme will check the growth of India's population. This is bound to affect the school-age population.

In this paper an attempt has been made to estimate the impact of the decline in the birth rate on the school-age population for the period 1971-1991 and its economic benefits.

The population projections are proposed to be made for the period 1971-91, to estimate the school-age population, while considering changes in fertility and mortality only. The net migration of India during the period is assumed to be negligible. The birth rate is taken as a measure of fertility while the future mortality trends are assumed in terms of expectation of life at birth for the purpose of projecting the population through survival ratios. The initial population is taken as that of 1961 census, adjusted according to the sex-wise age distribution given by Vig.³ The population is projected by sex and in five year age groups upto 70 and above and is given at five year intervals.

I. Fertility

The birth rate is taken as a measure of fertility. Factors such as the increase in female age at marriage, age at widowhood and family planning will effect the birth rate. The net effect of the increase in female age at marriage and widowhood is negligible.⁴ Family planning is,

3. Vig, O.P., opcit, pp. 121 and 127.

4. ibid, pp. 99-101.

thus, the only factor which may have a significant effect on the birth rate.

The achievements of the family planning programme may best be considered in terms of the number of births averted. For estimating the number of births averted due to different family planning methods, sterilization, IUCD and conventional contraceptives have been considered. The number of births averted during 1971-91 have been computed under different assumptions, taking into account the actual achievements of the family planning programme, for the period 1961-71. The three assumptions are explained below.

Assumption I: The annual targets recommended for the period 1971-79 by the Target Setting Committee have been assumed to be achieved during each year. For the period beyond 1978-79, for which no targets have been recommended, it is assumed that the tempo of achievement of the programme will be maintained and the targets for 1978-79 will continue to be achieved during each year thereafter.

Assumption II: The annual targets recommended for the period 1971-79 by the working group of the Planning Commission have been assumed to be achieved during each year. For the period beyond 1978-79, assumption made is the same as in Assumption I above.

Assumption III: The annual targets recommended for the period 1971-79 by the Target Setting Committee have been considered. On the basis of the actual average achievements of the programme during 1966-71, it is assumed that

70 per cent of sterilization and 50 per cent of IUCD's targets will be achieved each year. For conventional contraceptives the achievement of the targets is assumed to be 80 per cent in the first two years, 90 per cent in the next two years and 100 per cent in the remaining period. For the period beyond 1978-79, it is assumed that there will be 0.2 million, 0.1 million and 0.5 million increase each year in the performance of sterilization, IUCD and conventional contraceptive users respectively.

The targets to be achieved under different assumptions are given in Table I of the appendix.

Since, the Government of India made the family planning programme target oriented for achieving the desired goal in the shortest period, some Indian demographers have carried out exercises to estimate the number of couples who will have to become contraceptors in order to achieve the targets and number of births which will have to be averted in order to bring about the desired reduction in the birth rate. Method developed by Agarwala and Venkatacharya⁵ has been used to estimate the number of births averted due to various methods of family planning under different assumptions. The estimate number of births averted due to various methods of family planning for the period 1971-91 are given below in Table I.

5. Agarwala, S.N., and K. Venkatesharya, "A Method for estimating annual births saved by the use of various family planning methods" Studies in Demography, George Allen & Unwin Ltd., London, pp. 240-261.

Table 1. Number of Births Averted Due to Various Methods of Family Planning During 1971-91 Under Different Assumptions

Period	Assumptions	Vasectomy	Tubectomy ^a	IUCD	(in thousands)	
					Conventional Contraceptive	Total
1971-76 ^b	I	15758	3828	7257	6428	33271
	II	15752	3798	4859	4000	28400
	III	14011	3304	4850	5690	27655
1976-81	I	24046	7466	6794	9150	49465
	II	27233	8011	10664	7622	53432
	III	17815	5152	4467	9307	36741
1981-86	I	33629	10603	9040	9400	32672
	II	40870	12026	13194	8069	74150
	III	25651	7942	5816	10945	50354
1986-91	I	37858	11738	9040	9400	68036
	II	47405	13510	13215	8060	82190
	III	33391	10632	7554	12560	54237
1991-96	I	111231	33635	34131	34367	213444
	II	131260	37255	41932	27732	236179
	III	90868	27030	22687	38602	179187

a) 25 per cent of the sterilizations are assumed to be tubectomies.

b) Achievements of the family planning programme prior to 1971 have been taken into account.

The annual number of births averted due to different methods of family planning under different assumptions during 1971-91 are given in Table II of the appendix.

The birth rate has been estimated by taking the age specific fertility rates (A.S.F.R.) from the National Sample Survey,⁶ which have been adjusted to give birth rate of 41.7 for 1961, and are given in Table 2.

Those values are assumed to remain constant throughout the projection period.

6. Government of India; "Fertility and Mortality rates in rural National Sample Survey, Cabinet Secretariate, India" Fourteenth round, Report No.89, Table 1, Indian Statistical Institute, Calcutta, 1961.

Table 2. Adjusted Age Specific Fertility Rates

Age group	A.S.F.R.
15-20	148.7
20-25	270.0
25-30	250.0
30-35	193.6
35-40	131.5
40-45	51.1
45-50	18.3

The birth rates for the period 1971-91 at five year interval without family planning and under three different assumptions of the achievements of the family planning programme have been worked out and are given below in Table 3.

Table 3. Birth Rates With and Without Family Planning During 1961-91

Source	Y E A R					
	1961	1971	1976	1981	1986	1991
Without F.P.						
Programme	41.70	39.88	38.71	38.02	37.78	37.73
With F.P.	I	41.70	36.60	28.44	25.04	25.86
Programme	II	41.70	36.60	29.54	22.41	22.31
Programme	III	41.70	36.60	31.22	28.64	27.37

The decline in the birth rate from 41.7 to 37.73 during the inter-censal period 1961-91 may be due to secondary effect on the age composition of the population due to decline in mortality, with fertility remaining constant. The difference in the birth rates, taking into account

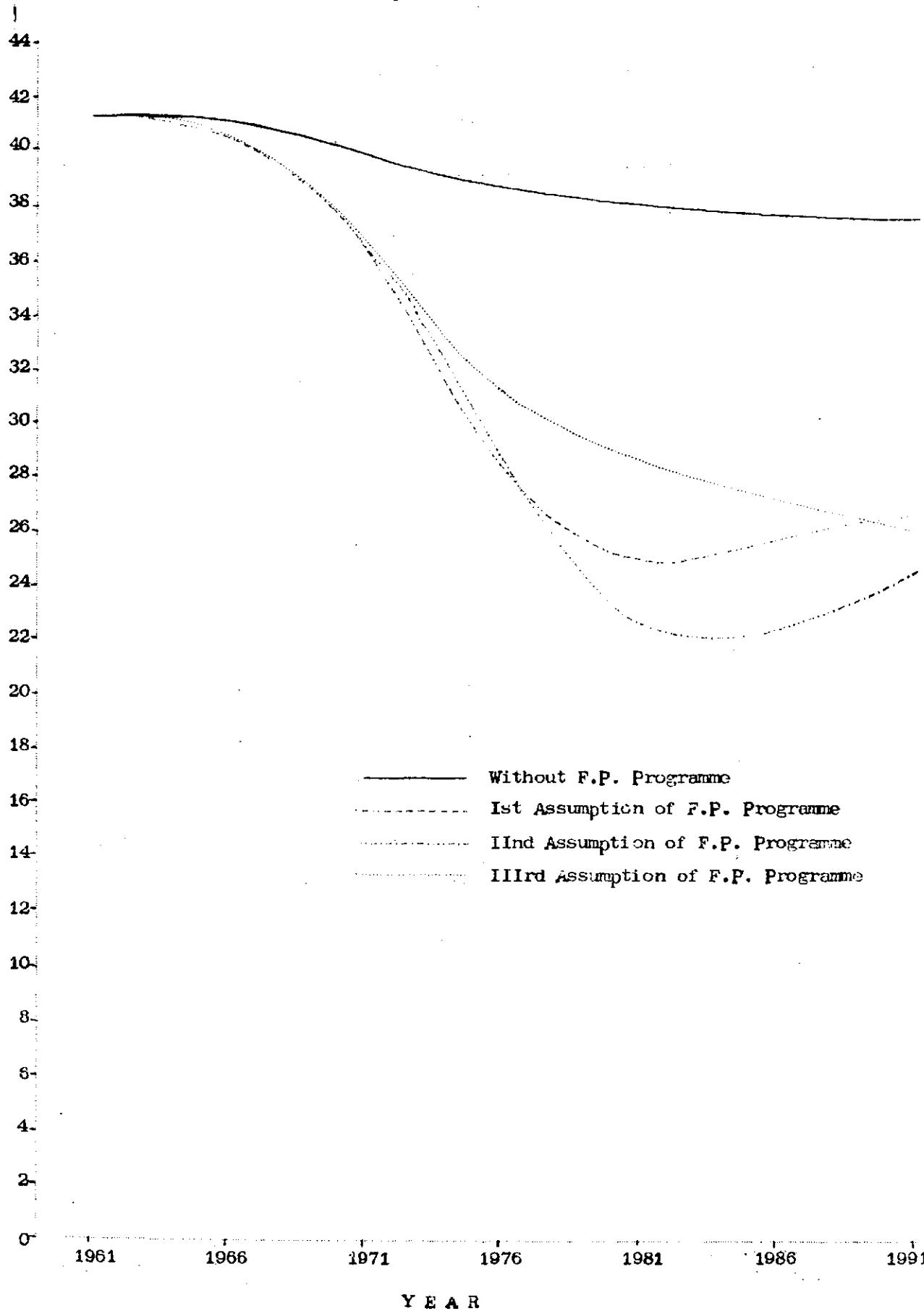
the family planning performance, estimated by us and those by the Target Setting Committee⁷ and the Working group of the Planning Commission,⁸ even though small, are primarily due to different assumptions made for computing the number of births averted. Agarwala⁹ has estimated the birth rate to be 38.23 by 1971, as against our estimate of 36.60. This difference is perhaps due to difference in the age distribution and the data used for achievements of the family planning programme for the computation of births averted.

It is apparent from Table 3, that there are wide variations in the estimates for the birth rates under different assumptions which is also clear from fig.1.

It is most unlikely that the targets suggested either by the Target Setting Committee or by the Planning Commission are fully achieved, which means the goal of reducing the birth rate to 25 or less by 1981 will not be accomplished. The targets suggested under assumption III are based on the average actual achievements of the family planning programme during 1965-71. These targets are moderate and more likely to be over achieved and the birth rate may decline to 29 by 1981 and 26 by 1991.

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7. Department of Family Planning, "Report of the Family Planning Target Setting Committee", 1971, p.15 (Mimeo graph)
 8. Department of Family Planning, "Report of the Task Force on Family Planning", September 1972, Appendix (ii), (Mimeo graphed).
 9. Agarwala, S.N., "Effect of Family Planning Programme on birth rate in India, 1961-71", Newsletter, I.I.P.S., Issue No.36, April. 1971. p.8.

Figure - 1: Birth Rates for India Under Different Assumptions



II. Mortality and Age Specific Survival Rates

The Expert Committee¹⁰ has recommended estimates for the expectation of life at birth upto 1981, which seem to be on the higher side. Immerwahr and Sinha¹¹ have also estimated expectation of life at birth upto 1981, which is quite different from the Expert Committee estimates. The mean value of the two sets of estimates has been assumed upto 1981 and for the period 1981-91 it has been linearly interpolated. The following table gives the expectation of life at birth by sex for the period 1971-91.

Table 4. Sex-wise Expectation of Life at Birth During 1971-91

Period	Male	Female
1971-76	54.7	54.5
1976-81	58.2	58.2
1981-86	61.5	61.7
1986-91	64.6	65.0

To estimate the fraction surviving each five year interval, the survivors within age groups (L_x) have been taken from the Model West Life tables prepared by Coale and Demeny¹². Then the fraction surviving from

10. Registrar General of India, "Report on the Population Projections worked out under the guidance of the Expert Committee set up by the Planning Commission under the Chairmanship of the Registrar General of India", 1969, p.27, Table 1.
11. Immerwahr, G.E., and U.P. Sinha, "Mortality rates for India 1951-81, for use of Computer Simulation Model", No. IIPS/Sim-37/1970, I.I.P.S., Bombay, p.20.
12. Coale, A.J. and P. Demeny, Regional Model Life Tables and Stable Populations, Princeton University Press, New Jersey, 1966.

$(x-x+5)$ to $(x+5 - x+10)$ during a given interval has been taken as $\frac{L_x}{5} \frac{x+5}{L_x}$.

The values of L_x for different values of the expectation of life at birth have been linearly interpolated.

III. Population Projections

The component method, based on certain assumptions of future fertility, mortality and migration, has been used for making population projections. The population of India for 1961 Census adjusted for sex-age as given by Vig¹³ has been projected in quinquennial age groups, by the component method for the period 1971-91, under the following assumptions:

1. The assumptions about fertility as explained in section I.
2. The assumptions about mortality as explained in section II.
3. The sex ratio (male over female births) at birth is assumed as 1.06.
4. Net migration has been assumed to be negligible.

The sex-wise quinquennial age distribution of the projected population is given in Table III - VI of the appendix. The population by sex aged 0-5 has been obtained by applying the survival ratio $0^L_{5/50}$ to the number of total births of a given sex.

The total population for India projected for different years under different assumptions is given below in Table 5.

13. Vig. O.P., opcit., p.109.

Table 5. Projected Population Under Different Assumptions
for Different Years.
(in millions)

Year	Assumptions			
	Without F.P.	I	II	III
1961	439.25	439.25	439.25	439.25
1971	558.13	551.96	551.96	551.96
1976	636.59	608.26	612.56	613.05
1981	732.49	659.37	660.03	675.70
1986	845.87	714.66	704.53	742.00
1991	983.35	782.54	759.86	813.91

Pandit¹⁴ has projected population of India for 1961-2001 under different assumptions. His estimates, under constant fertility, are consistently higher for all the years. This is perhaps due to difference in assumptions made for making the projections.

IV. School Age Population

The Education Commission¹⁵ appointed by the Government of India in 1964, has recommended a common pattern of primary and secondary education in the country which is given in Table 6 below:

Table 6. Pattern of Primary and Secondary Education in India

Level of Education	Class	Corresponding age group
Lower Primary	1- 4	6- 9
Upper Primary	5- 7	10-12
Lower secondary	8-10	13-15
Higher secondary	11-12	16-17

14. Pandit, H.N., "National population explosion : 1961-2001", Artha Vijnana, Vol. 10, 1968, pp. 113-137.

15. Ministry of Education, Government of India, Report of the Education Commission 1964-66, 1966.

Newton's¹⁶ interpolation method has been used for estimating the school age population for different levels of education. The relationships used for different age groups are as under:

$$P_{6-9} = 0.672 \quad P_{5-10} + 0.176 \quad P_{10-15} - 0.048 \quad P_{15-20}$$

$$P_{10-12} = 0.056 \quad P_{5-10} + 0.604 \quad P_{10-15} - 0.064 \quad P_{15-20}$$

$$P_{13-15} = -0.088 \quad P_{5-10} + 0.536 \quad P_{10-15} + 0.152 \quad P_{15-20}$$

$$P_{16-17} = -0.032 \quad P_{5-10} + 0.104 \quad P_{10-15} + 0.328 \quad P_{15-20}$$

where P_{6-9} denotes population aged 5-9 and so on.

The estimated school age population by sex for different levels of education, at five year interval, during the period 1971-91 under different assumptions is given in Table VII of the appendix.

The Education Commission¹⁷ has estimated school enrolment as percentage of population in the corresponding age group at five year interval by sex for the period 1965-66 to 1985-86, which is given below in Table 7.

During 1986-91, the school enrolment has been linearly interpolated for the secondary level whereas for the primary it has been assumed that all the children will be studying upto upper primary.

16. Yeole, S.B., and P.R. Saraswathy; "On estimating the school age population for compulsory education in some ECAFE countries", Indian Educational Review, Vol.7, January, 1972, pp. 116-122.

17. Ministry of Education, Government of India, op cit, pp. 161-167.

Table 7. Enrolment in Primary and Secondary Education by Sex During Different Years

Level of Education	1970-71		1975-76		1980-81		1985-86		1990-91	
	M	F	M	F	M	F	M	F	M	F
Lower Primary	109.8	68.6	109.0	97.2	110.8	110.7	110.0	110.0	109.0	100.0
Upper Primary	67.7	33.0	81.9	55.7	90.0	90.0	80.0	90.0	100.0	100.0
Lower Secondary	34.2	12.2	40.8	16.9	49.1	22.6	60.4	30.6	66.0	41.8
Higher Secondary	14.6	3.5	17.0	4.8	21.7	7.4	28.8	11.4	38.4	16.7

The school going population has been obtained by multiplying the enrolment ratios given in Table 7 to the corresponding school age population given in Table VII of the appendix. The enrolment ratios more than 100 have been assumed as 100. The estimated school going population for different levels of education, by sex and at five year interval for the period 1971-91 under different assumptions is given in Table VIII of the appendix.

The impact of the family planning programme on the school enrolment will be apparent from the table 8 given below.

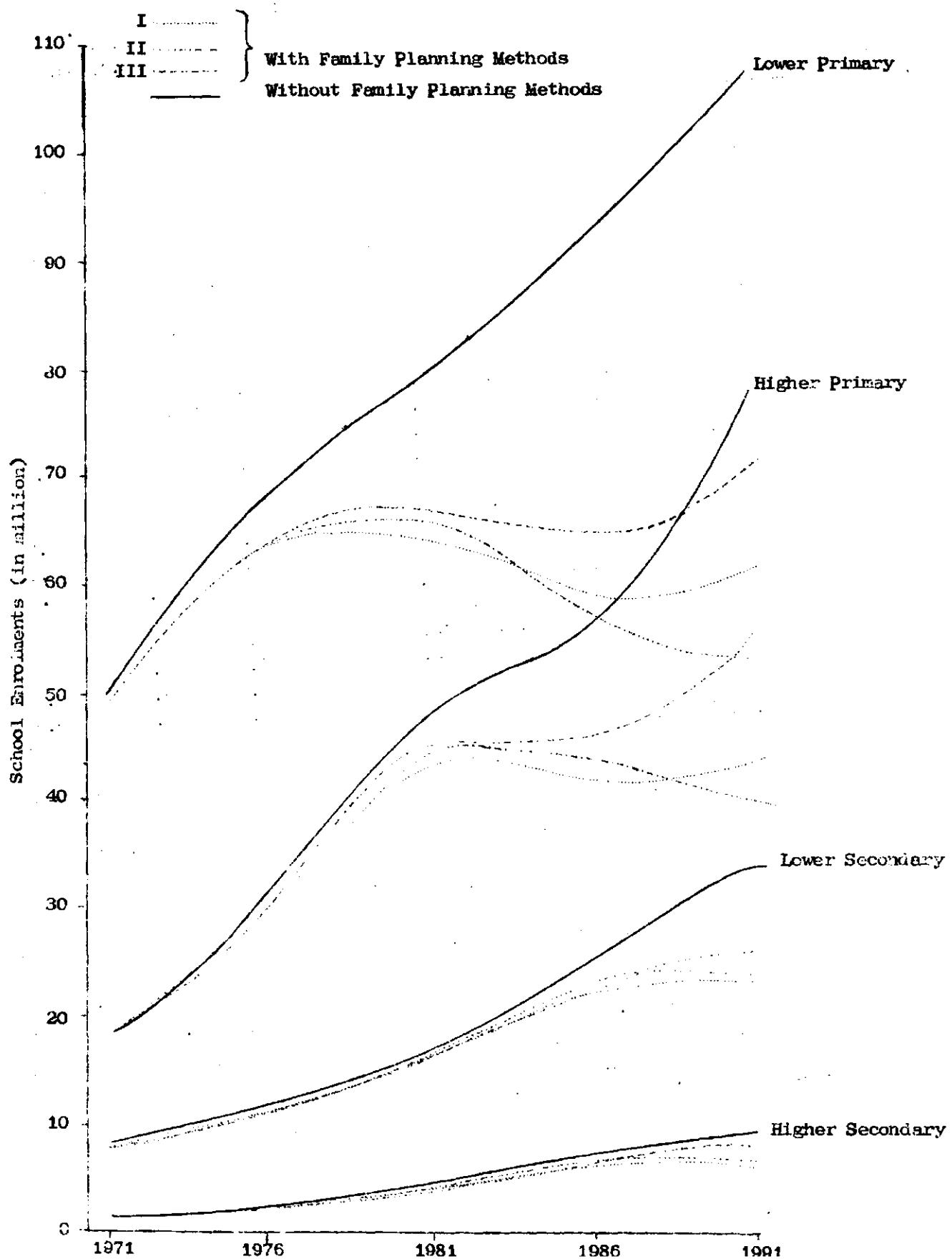
It may be seen from the table 8 that the school enrolment will increase, when there is no family planning programme, from 69.02 millions in 1971 to 180.42 millions in 1991 at primary level and from 10.02 millions in 1971 to 44.15 millions in 1991 at secondary level. The increase in enrolment, taking into account the family planning achievements, will be from 68.63 millions in 1971 to 95.0 - 122.0 millions in 1991 at primary level and from 13 millions in 1971 to 30 - 34 millions in 1991 at secondary level.

Table 8. Percentage Decrease in School Enrolment Due to Family Planning Programme During 1971 and 1991

Level of Education	Assumption	School going Population (in million)		Percentage of Enrolment with F.P. Over without F.P.	
		1971	1991	1971	1991
Lower Primary	Without F.P.	49.80	107.92		
	I	49.43	61.90	99.3	57.4
	II	49.43	53.91	99.3	50.0
	III	49.43	71.15	99.3	65.9
Upper Primary	Without F.P.	19.22	72.49		
	I	19.20	43.71	99.9	60.3
	II	19.20	40.75	99.9	56.2
	III	19.20	50.94	99.9	70.3
Lower Secondary	Without F.P.	8.03	34.93		
	I	8.01	23.36	99.7	66.9
	II	8.01	23.21	99.7	66.4
	III	8.01	26.44	99.7	75.7
Higher Secondary	Without F.P.	1.99	9.22		
	I	1.98	7.00	99.5	75.9
	II	1.98	7.30	99.5	79.2
	III	1.98	7.53	99.5	81.7
Total	Without F.P.	79.04	224.56		
	I	78.62	135.97	99.5	60.5
	II	78.62	125.17	99.5	55.7
	III	78.62	156.06	99.5	69.5

It is apparent from the above Table that the family planning programme had negligible impact on the school enrolment by 1971. This will become quite significant by 1991, when the enrolment will be reduced by about 30-44 per cent. At primary level, the decline in school enrolment is maximum under assumption II while at the secondary level the decline is same under assumption I and II, but minimum under assumption III. Fig. 2 clearly brings out the impact of the family planning programme on the school enrolment for different levels of education.

Figure - 2: School Enrolment By Level of Education



In all 68-100 million's enrolments will be averted due to the family planning programme by 1991.

The Education Commission¹⁸ has estimated average annual cost per pupil for the years 1965-66, 1975-76 and 1985-86 for different levels of education. The cost per pupil for the years 1970-71 has been taken as mean of the value given for 1965-66 and 1975-76 and similarly for the year 1980-81. However, the cost per pupil for the year 1990-91 has been linearly interpolated.

The average annual cost per pupil for different years for different levels of education is given in the following table.

Table 9. Average Annual Cost per pupil for Different Years for Different Levels of Education

Level of Education	Years					
	1965-66	1970-71	1975-76	1980-81	1985-86	1990-91
Lower Primary	30	41	52	66	80	94
Upper Primary	45	66	87	103	119	135
Lower Secondary	107	155	203	236	268	300
Higher Secondary	192	278	363	404	444	485

The life table technique has been used for estimating the expected number of years to be spent by a pupil for completing the school education at various grades. The radix of the school life table has been taken as 100,000 pupils entering grade 1. Different elements of the school life table are explained below in brief.

18. Ministry of Education, Government of India; op.cit. pp 476-480.

- l_x - This column gives the estimated number of survivors at each grade. The values in this column are obtained by multiplying the values in each grade by the corresponding adjusted survival rates (s'_x).
- s'_x - The survival rate s'_x , is the probability of passing from grade x to grade $x + 1$. The values shown in this column are the values adjusted for the repeaters. The adjustment has been made on the assumption that failures have the same probability of passing as the refreshers and that only one repetition has been considered. The remaining pupils are assumed to have dropped. Then
- $$s'_x = \frac{1+2}{2} s'_x = \frac{2}{2 - s'_x}$$
- The values of s'_x used are those given by the Government of Maharashtra¹⁹ for the period 1950-51 to 1965-66.
- L_x - This column gives the number of years lived in grade x and grade $x+1$. The values shown in this column are calculated as $z(i_{x+1} i_{x+1})$.
- T_x - This column gives the total number of school years remaining to all pupils who are enrolled in school during each grade. The total number of years lived by a cohort is simply the sum of the years lived at every grade
- e_x - This column shows the average number of school years remaining to the pupils who are alive at the grade x . This is equal to the total number of school years lived after grade x , divided by the number of pupils who survived at that grade: $e_x = \frac{T_x}{l_x}$

19. Education & Social Welfare Department, Govt. of Maharashtra, Education Development in Maharashtra State, Bombay, 1968, pp. 99-101.

Table 10. School Life Table for the Enrolled Population for 1965-66

Grade	S_x	I_x	L_x	T_x	e_x
I	.8767	100000	100000	688176	6.88
II	.6667	87670	93835	594341	6.32
III	.9635	58450	73006	510506	6.99
IV	.9578	56317	57383	437500	7.62
V	.9607	53940	55129	380117	6.90
VI	.9633	51820	52880	324988	6.15
VII	.9350	49918	50869	272108	5.35
VIII	.9784	48171	49045	221239	4.51
IX	.9862	47131	47651	172194	3.61
X	.8521	46481	46806	124543	2.66
XI	.7519	39608	43044	77737	1.80
XII	.6782	29780	34693	34693	1.00

The Education Commission²⁰ has estimated the proportionate distribution of pupils within each level of education for 1965-66 for the grades I to X. This is assumed to be in the ratio 11 to 9 for the grades XI and XII. The following table gives the proportionate distribution of pupils for various levels of education.

Table 11. Proportionate Distribution of Pupils According to Grade and Level of Education

Level of Education	Grade	Proportions of Pupils
Lower Primary	I	.3743
	II	.2549
	III	.2004
	IV	.1704
Upper Primary	V	.4156
	VI	.3226
	VII	.2618
Lower Secondary	VIII	.4135
	IX	.3196
	X	.2669
Higher Secondary	XI	.5500
	XII	.4500

20. Ministry of Education, Government of India; op.cit, p. 581.

The cost of education is a function of (i) number of pupils, (ii) cost per pupil per annum and (iii) time. Knowing the proportionate distribution of pupils according to grade, the number of pupils can be worked out from Table VIII for various grades. The time considered is the average number of school years (e_x) remaining to the pupils at the grade x . The cost of education has been worked out on the assumption that the values of inputs for the cost function will remain constant during the period, 1971-91. This assumption will lead to underestimation of the savings on education due to the Family Planning Programme, the extent of which cannot be predicated.

The cost of education on different cohorts under different assumptions, given in table 12 below, has been computed according to the method explained above.

Table 12. Cost of Education for Different Cohorts for various levels of Education under Different Assumption

Level of Education	Assumption	(Rs. in millions)					
		Cohort for the year					
		1970-71	1975-76	1980-81	1985-86	1990-91	Total
Lower Primary	Without F.P.	15932	27663	40064	55494	71994	214147
	I	15814	26182	32245	35456	43014	152711
	II	15814	26182	33452	34500	37462	147420
	III	15314	26182	33793	38821	49413	164063
Upper Primary	Without F.P.	9189	18997	33548	44405	64790	170929
	I	9181	18710	30819	33451	39063	131321
	II	9181	18710	30966	35123	36416	130396
	III	9181	18710	31252	35924	45529	140596
Lower Secondary	Without F.P.	5360	9951	16687	27605	41176	100779
	I	5351	9723	16349	23458	27529	82410
	II	5351	9723	16222	24696	27357	83349
	III	5351	9723	16207	24182	31160	85623
Higher Secondary	Without F.P.	917	1502	2705	4776	6442	16342
	I	912	1488	2629	4429	4886	14415
	II	912	1488	2688	4503	5100	14691
	III	912	1488	2687	4444	5257	14788
Total	Without F.P.	31398	58113	93004	132280	187402	502197
	I	31258	56103	82114	96794	114492	380761
	II	31258	56103	83338	98822	106335	375856
	III	31258	56103	83939	103371	131389	406060

The difference of the cost of education with and without family planning gives the savings on the expenditure on education due to the family planning programme. These savings are shown in Table 13 below.

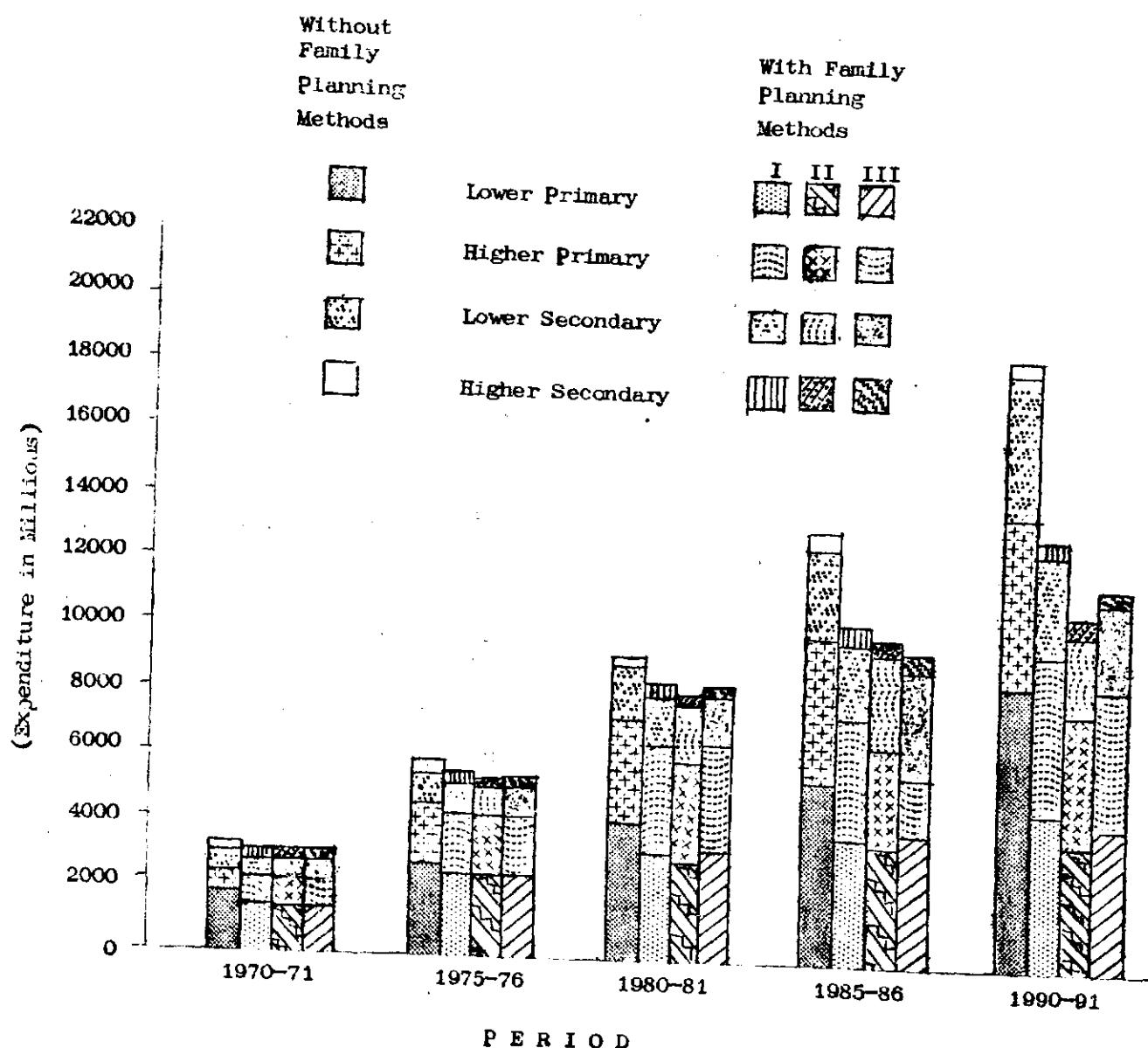
Table 13. Savings on Education Due to Family Planning for Various Cohorts under Different Assumptions.

(Rs. in millions)

Level of Education	Assumption	Cohort for the Year					Total
		1970-71	1975-76	1980-81	1985-86	1990-91	
Lower Primary	I	118	1481	7819	20038	31980	61136
	II	118	1481	6602	20994	37532	66727
	III	118	1481	6271	16673	25551	50094
Upper Primary	I	8	287	2729	10954	25727	39705
	II	8	287	2582	9282	28374	40533
	III	8	287	2296	8481	19261	30333
Lower Secondary	I	9	28	338	4147	13647	18169
	II	9	28	465	2909	13819	17230
	III	9	28	420	3423	10016	13956
Higher Secondary	I	5	14	16	347	1556	1938
	II	5	14	17	273	1342	1651
	III	5	14	18	332	1185	1584
Total	I	140	1810	10902	35486	72910	121243
	II	140	1810	9666	33458	81067	126141
	III	140	1810	9065	28909	56013	95937

It may be seen from the above table that the savings have increased during each successive five-year period. The savings are maximum under assumption II. This is apparent from fig. 3. About 84 per cent of the total savings will be due to the primary education. During 1971-91 about 131.96 millions school enrolments will be averted due to the family planning programme resulting in savings on the cost of education programme to the extent of Rs. 95937 millions under assumption III, which is considered to be

Figure - 3: Expenditure on Education By Level of Education



feasible. The saving per school enrolment varies from Rs. 727 to Rs. 956. Assuming that the savings due to 1990-91 cohort will continue upto 2001, then the average annual savings for all these cohorts will vary from Rs.3198 millions to Rs. 4205 millions, which is many times more than the actual annual expenditure on the family planning programme.[@] Thus the returns due to the National Family Planning Programme will over compensate the investment on it.

Summary

The Government of India is implementing the National Family Planning Programme as a part of the developmental plans of the country. This is with a view to reduce the birth rate to 25 or less by 1980-81. The declining birth rate may affect the size and age distribution of the population of the country, which in turn may affect the school-age population. The reduction of birth rate from 41.70 in 1961 to 26.05 in 1991 will avert about 131.96 millions school enrolments during 1971-91. This will save about Rs.3198 to 4205 millions per annum. This is many times more than the actual annual expenditure due to the National Family Planning Programme and will over compensate the investment on it.

Acknowledgement

I am grateful to Dr. S.N. Agarwala, Director, International Institute for Population Studies, Bombay, for his guidance and valuable suggestions, and Mrs. A. Bhande for going through the draft and her comments.

Thanks are also due to Mr. B.B.Yeole for his valuable assistance in computational work and making references available to me.

@ The expenditure on the Family Planning Programme during 1970-71 was Rs. 450 million, which might double by 1991.

Table I. Annual targets for various family planning methods to be achieved under different assumptions.

Method	Sterilization			IUCD			C.C.			
	Year	I	II	III	I	II	III	I	II	III
1971-72	3.0	2.2	2.1	1.2	0.5	0.6	7.0	2.4	5.6	
72-73	3.4	4.0	2.3	1.6	0.9	0.8	9.0	4.3	7.2	
73-74	3.8	4.2	2.7	2.2	1.7	1.1	10.4	6.5	9.4	
74-75	4.2	4.5	2.9	2.2	2.4	1.1	12.0	8.5	10.8	
75-76	4.6	5.4	3.2	2.4	3.0	1.2	13.0	9.5	13.0	
76-77	5.0	6.2	3.5	2.6	3.3	1.3	13.0	10.5	13.0	
77-78	5.2	6.5	3.6	2.6	3.6	1.3	14.0	11.5	14.0	
78-79	5.4	6.8	3.8	2.6	3.8	1.3	14.0	12.0	14.0	
79-80	5.4	6.8	4.0	2.6	3.8	1.4	14.0	12.0	14.0	
80-81	5.4	6.8	4.2	2.6	3.8	1.5	14.0	12.0	15.0	
81-82	5.4	6.8	4.4	2.6	3.8	1.6	14.0	12.0	15.5	
82-83	5.4	6.8	4.6	2.6	3.8	1.7	14.0	12.0	16.0	
83-84	5.4	6.8	4.8	2.6	3.8	1.8	14.0	12.0	16.5	
84-85	5.4	6.8	5.0	2.6	3.8	1.9	14.0	12.0	17.0	
85-86	5.4	6.8	5.2	2.6	3.8	2.0	14.0	12.0	17.5	
86-87	5.4	6.8	5.4	2.6	3.8	2.1	14.0	12.0	18.0	
87-88	5.4	6.8	5.6	2.6	3.8	2.2	14.0	12.0	18.5	
88-89	5.4	6.8	5.8	2.6	3.8	2.3	14.0	12.0	19.0	
89-90	5.4	6.8	6.0	2.6	3.8	2.4	14.0	12.0	19.5	
90-91	5.4	6.8	6.2	2.6	3.8	2.5	14.0	12.0	20.0	

Table II. Number of births averted due to various methods of family planning under three different assumptions during 1971-91

(in thousands)

Year	Vasectomy			Tubectomy*			U. C. D.			C. C.			Total		
	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
1971-72	1451	1428	1421	291	291	291	408	243	243	415	290	377	2565	2249	2332
1972-73	1807	1715	1646	400	245	342	718	329	410	994	374	794	3919	2663	3192
1973-74	2253	2207	1916	605	611	562	1041	384	536	1247	637	1024	5146	3339	4033
1974-75	2731	2775	2214	734	893	615	1361	623	684	1440	927	1294	6316	5123	4807
1975-76	3239	3353	2537	960	970	706	1505	1056	753	1639	1169	1508	7343	6548	5504
1976-77	3769	4014	2978	1141	1152	812	1638	1521	819	1746	1303	1743	8294	7990	6252
1977-78	4312	4746	3231	1325	1381	922	1751	1928	876	1773	1437	1770	9161	9492	6799
1978-79	4848	5487	3673	1507	1621	1029	1792	2211	896	1880	1558	1877	10022	10377	7380
1979-80	5340	6182	3905	1672	1836	1134	1805	2430	913	1880	1612	1905	10697	12060	7357
1980-81	5782	6804	4223	1821	2021	1255	1808	2574	963	1880	1612	2012	11291	13011	8453
1981-82	6162	7345	4634	1945	2176	1367	1803	2623	1023	1880	1612	2039	11795	13758	9965
1982-83	6464	7793	4810	2049	2308	1479	1808	2640	1093	1880	1612	2146	12201	14253	9523
1983-84	6743	8208	5109	2136	2419	1587	1808	2643	1163	1880	1612	2173	12569	14382	10032
1984-85	7010	8590	5432	2207	2535	1694	1808	2643	1233	1880	1612	2230	12905	15380	10639
1985-86	7248	8934	5766	2266	2538	1715	1808	2643	1302	1880	1612	2307	13202	15777	11190
1986-87	7397	9202	6075	2304	2643	1916	1808	2643	1372	1880	1612	2414	13389	16100	11777
1987-88	7512	9374	6381	2333	2682	2021	1808	2643	1441	1880	1612	2441	13533	16311	12284
1988-89	7598	9516	6681	2354	2708	2126	1808	2643	1511	1880	1612	2548	13640	16479	12866
1989-90	7657	9625	6979	2369	2732	2233	1808	2643	1580	1880	1612	2575	13714	16712	13367
1990-91	7694	9688	7275	2378	2743	2336	1808	2643	1650	1880	1612	2682	13760	16688	13943

* 25 per-cent of the sterilizations are assumed to be tubectomies.

Table III. Population Projection of India by Age and Sex 1961-91 (Constant Fertility)

Age group	<u>MALES</u>					(in thousands)	
	1961	1966	1971	1976	1981		
0- 5	33690	40744	47181	53715	61629	71719	84361
5-10	28822	31411	38956	45604	52405	60588	70942
10-15	25924	28001	30948	38498	45185	52041	60282
15-20	23252	25172	27566	30556	38106	44824	51724
20-25	20762	22387	24605	27054	30095	37648	44407
25-30	18475	19631	21769	24048	26560	29661	37233
30-35	16302	17468	19113	21222	23564	26142	29307
35-40	14033	15424	16837	18548	20718	23124	25768
40-45	11841	13193	14739	16217	17983	20216	22633
45-50	9690	10945	12453	14034	15562	17383	19655
50-55	7675	8779	10138	11648	13244	14805	16656
55-60	5819	6750	7906	9231	10714	12296	13862
60-65	4166	4890	5821	6906	8162	9579	11108
65-70	2762	3266	3948	4775	5750	6891	8192
70+	3147	3512	4160	5073	6259	7736	9535
Total	226,410	251,573	286,140	327,129	375,941	434,653	505,715
<u>FEMALES (000's)</u>							
0- 5	33331	38419	43882	50053	58504	67111	78947
5-10	28031	30980	36254	41995	43817	57217	66114
10-15	25009	27358	30376	35700	41598	48400	56830
15-20	22306	24395	26808	29887	35336	41213	48072
20-25	19815	21596	23753	26225	29466	34831	40316
25-30	17495	19064	20917	23129	25771	28998	34460
30-35	15069	16746	18335	20293	22662	25298	28589
35-40	12558	14345	16074	17766	19824	22183	24875
40-45	10237	11391	13702	15462	17282	19320	21728
45-50	8237	9629	11285	13097	14946	16737	18808
50-55	6492	7637	9017	10652	12517	14315	16126
55-60	4933	5872	6993	8337	9998	11779	13570
60-65	3597	4284	5173	6245	7593	9137	10869
65-70	2469	2926	5360	4374	5412	6609	8054
70+	3256	3466	4005	6242	6814	8023	9779
Total	439,250	238,608	241,939	309,457	356,546	411,221	477,637
Grand Total	439,250	490,181	553,129	636,586	732,487	845,374	983,352

Table IV. Population Projections of India by Age and Sex (under Assumption I)

Age group	<u>MALES</u>						(in thousands)
	1961	1966	1971	1976	1981	1986	
0- 5	33690	40413	44326	42127	38342	41139	47768
5-10	23922	31411	38640	42344	41100	37694	40693
10-15	25924	28001	30948	39136	42451	40814	37504
15-20	23252	25172	27566	30556	37797	42112	40566
20-25	20762	22397	24605	27054	30095	37343	41720
25-30	18475	19631	21769	24048	26560	29661	36931
30-35	16302	17463	19113	21222	23564	26142	29307
35-40	14083	15424	16837	18543	20718	23124	25768
40-45	11341	13193	14739	16217	17988	20216	22683
45-50	9600	10945	12453	14034	15562	17363	19655
50-55	7675	8779	10138	11643	13244	14805	16656
55-60	5819	6750	7906	9231	10714	12296	13862
60-65	4166	4890	5821	6906	8162	9579	11108
65-70	2762	3266	3948	4775	5750	6391	8192
70+	3147	3512	4160	5073	6259	7736	9535
Total	226,410	251,242	282,969	312,469	338,306	366,935	401,948
<u>FEMALES</u>							
0- 5	33331	38060	41227	39255	36398	38496	44703
5-10	28031	30980	35016	39457	38236	35598	37024
10-15	25009	27358	30376	35367	39084	37959	35380
15-20	22306	24395	26808	29887	35007	38722	37702
20-25	19815	21506	23753	26225	29466	34556	38349
25-30	17405	19064	20917	23129	25771	28908	34139
30-35	15069	16746	18385	20293	22668	25298	28589
35-40	12558	14345	16074	17766	19824	22183	24875
40-45	10237	11891	13702	15462	17282	19320	21728
45-50	8237	9529	11205	13097	14946	16737	18908
50-55	6492	7637	917	10652	12517	14315	16126
55-60	4938	5872	6993	8337	9998	11779	13570
60-65	3597	4284	5178	6245	7593	9137	10869
65-70	2469	2126	5360	4374	5412	6609	8054
70+	3256	3466	4005	6242	6814	8023	9779
Total	212,840	238,249	268,996	295,783	321,066	347,730	380,595
Grand Total	439,250	489,491	551,065	608,257	659,372	714,665	782,543

Table- V. Population Projection of India by Age and Sex Under Assumption II.

Age-group	MALES (in thousands)						
	1961	1966	1971	1976	1981	1986	1991
0-5	33690	40413	44326	44356	36527	35545	41214
5-10	28822	31411	38956	42844	43274	35910	35160
10-15	25924	28001	30948	38186	42451	42974	35729
15-20	23252	25172	27566	30556	37797	42112	42713
20-25	20762	22387	24605	27054	30095	37343	41720
25-30	18475	19631	21769	24048	26560	29661	36931
30-35	16302	17468	19113	21222	23564	26142	29307
35-40	14083	15424	16837	18548	20718	23124	25768
40-45	11841	13193	14739	16217	17988	20216	22683
45-50	9690	10945	12453	14034	15562	17383	19655
50-55	7675	8779	10138	11648	13244	14805	16656
55-60	5819	6750	7906	9231	10714	12296	13862
60-65	4166	4890	5821	6906	8162	9579	11108
65-70	2762	3266	3948	4775	5750	6891	8192
70+	3147	3512	4160	5073	6259	7736	9535
Total	226,410	251,242	282,969	314,698	338,665	361,717	390,233
FEMALES							
0-5	33331	38060	41227	41332	34675	33261	38570
5-10	28031	30980	36254	39457	40312	33912	32767
10-15	25009	27358	30376	35367	39084	39967	33705
15-20	22306	24395	26808	29887	35007	38722	39696
20-25	19815	21596	23753	26225	29466	34556	38349
25-30	17495	19064	20917	23129	25771	28998	34139
30-35	15069	16746	18335	20293	22668	25298	28589
35-40	12558	14345	16074	17766	19824	22183	24875
40-45	10237	11891	13702	15462	17282	19320	21728
45-50	8237	9629	11285	13097	14946	16737	18808
50-55	6492	7637	9017	10652	12517	14315	16126
55-60	4938	5872	6993	8327	9998	11779	13570
60-65	3597	4284	5178	6245	7593	9137	10869
65-70	2469	2926	5360	4374	5412	6609	8054
70+	3256	3466	4005	6242	6814	8023	9779
Total	212,840	238,240	268,996	297,865	321,369	342,817	369,624
Grand Total	439,250	489,491	551,965	612,563	660,034	704,534	759,857

Table VI. Proportion Projection of India by Age and Sex Under Assumption III.

MALES (in thousands)

Age group	1961	1966	1971	1976	1981	1986	1991
0- 5	33690	40413	44326	44609	44318	46959	50027
5-10	28822	31411	38640	42844	43521	43569	46450
10-15	25924	28001	30948	38186	42451	43219	43349
15-20	23252	25172	27566	30556	37797	42112	42956
20-25	20762	22387	24605	27054	30095	37343	41720
25-30	18475	19631	21769	24048	26560	29661	36931
30-35	16302	17468	19113	21222	23564	26142	29307
35-40	14086	15424	16837	18548	20718	23124	25768
40-45	11841	13193	14739	16217	17983	20216	22683
45-50	9690	10945	12453	14034	1562	17383	19655
50-55	7675	8779	10138	11648	13244	14805	16656
55-60	5819	6750	7906	9231	10714	12296	13862
60-65	4166	4890	5821	6906	8162	9579	11108
65-70	2762	3266	3948	4775	5750	6891	8192
70+	3147	3512	4160	5073	6259	7736	9535
Total	226,410	251,242	282,969	314,951	346,703	381,035	418,199

FEMALES

Age group	1961	1966	1971	1976	1981	1986	1991
0- 5	33331	38060	41227	41568	42071	43942	46817
5-10	28031	30980	35916	39457	40542	41146	43289
10-15	25009	27358	30376	35367	39084	40195	40894
15-20	22306	24395	26108	29887	35007	38722	39923
20-25	19815	21596	23753	26225	29466	34556	38349
25-30	17495	19064	20917	23129	25771	28998	34139
30-35	15069	16746	18385	20293	22668	25298	28589
35-40	12558	14345	16074	17766	19824	2183	24375
40-45	10237	11291	13702	15462	17282	19320	21728
45-50	8237	9629	11285	13097	14946	16737	18808
50-55	6492	7637	9017	10652	12517	14315	16126
55-60	4938	5672	6993	8337	9998	11779	13570
60-65	3597	4284	5178	6245	7593	9137	10869
65-70	2469	2926	3360	4374	5412	6609	8054
70+	3256	3466	4005	6242	6814	8023	9779
Total	212,840	238,249	268,996	298,101	328,995	360,960	395,709
Grand Total	339,250	489,491	551,965	613,052	675,698	741,995	813,908

Table VII. Estimated School Age Population by Sex for India During 1971-91
Under Different Assumptions for Different Levels of Education. (in thousands)

Level of Education:	Assumption	1971		1976		1981		1986		1991	
		M	F	M	F	M	F	M	F	M	F
Lower Primary	Without F.P.	30302	28422	35955	33069	41340	38430	47723	44990	55800	52123
	I	30089	28195	34072	31305	33276	30927	30492	28744	31999	29902
	II	30089	28195	34072	31305	34737	32288	29674	27964	27866	26046
	III	30089	28195	34072	31305	34903	32382	34864	32866	36782	34371
Upper Primary	Without F.P.	19234	18783	24005	22145	27968	25764	32164	29994	37314	35178
	I	19221	18764	23663	21781	25693	23667	24231	22594	22485	21222
	II	19221	18764	23663	21781	25815	23780	25444	23721	20959	19787
	III	19221	18764	23663	21781	25828	24226	26022	24264	26208	24733
Lower Secondary	Without F.P.	17350	17166	21266	19982	25400	23372	29378	27172	33930	31950
	I	17330	17106	21017	19533	24882	22901	24960	23099	22687	21357
	II	17330	17106	21017	19533	24691	22723	26275	24324	22549	21216
	III	17330	17106	21017	19533	24669	22702	25732	23809	25677	24178
Higher Secondary	Without F.P.	11014	10792	12567	12172	15521	14354	18177	16721	20965	19562
	I	10959	10743	12441	12063	15197	14322	16851	15509	15904	14832
	II	10959	10743	12441	12063	15428	14257	17133	15772	16600	15477
	III	10959	10743	12441	12063	15420	14250	16913	15564	17111	15962

Table VIII. Estimated School Going Population by Sex for India for Various Levels of Education Under Different Assumption During 1971-91. (in thousands)

Level of Education : Assumption	1971		1976		1981		1986		1991		
	M	F	M	F	M	F	M	F	M	F	
Lower Primary	Without F.P.	30302	19497	35955	32143	41340	38430	47723	44990	55800	52123
	I	30089	19342	34072	30428	33276	30927	30492	28744	31999	29902
	II	30089	19342	34072	30428	34337	32288	29674	27964	27866	26016
	III	30089	19342	34072	30428	34903	32382	31864	29994	36782	34371
Upper Primary	Without F.P.	13021	6198	19660	12335	25171	23186	28948	26995	37314	35178
	I	13013	6190	19380	12132	23124	21300	21808	20335	22485	21222
	II	13013	6190	19380	12132	23234	21402	22900	21349	20959	19787
	III	13013	6190	19380	12132	23245	21803	23120	21838	26208	24733
Lower Secondary	Without F.P.	5934	2094	8777	3377	12471	5282	17744	8315	23751	11183
	I	5927	2087	8575	3301	12217	5176	15076	7068	15881	7475
	II	5927	2087	8575	3301	12123	5135	15870	7443	15784	7426
	III	5927	2087	8575	3301	12112	5130	15542	7286	17974	8162
Higher Secondary	Without F.P.	1608	378	2136	584	3368	1062	5235	1906	6290	2934
	I	1600	376	2115	579	3363	1060	4853	1768	4771	2225
	II	1600	376	2115	579	3348	1055	4934	1798	4980	2322
	III	1600	376	2115	579	3346	1054	4870	1774	5133	2394