An Empirical Analysis of Fertility Behaviour in Transition:
A Perspective for India

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Abstract: Women hold the centre-stage of population studies in recent years. The population as a theoretical construct abstracts from the active and living human bodies certain numerically quantitative traits that are required for utilitarian management of the society. To have an idea of population as a category in a country it is imperative that mortality and fertility behaviour dynamics be studied. Fertility behaviour in turn is somewhat determined by the response to contraceptive practices among differentially located women in the rural-urban dichotomous structure. This paper attempts to study empirically these aspects in order to focus on how the age composition would look like in the condition of declining mortality and fertility rates in the foreseeable future. It draws based on National Family Health Survey data a portrait of total fertility rates of different major states along with their contraceptive practices by currently married women. It has been projected by UN World Population Prospects, 2001 that India would achieve Replacement level of fertility rate of 2.1 (= 2 children per women) by 2020. This paper also reviews how some of the major states would have different levels of fertility rate in near future with respect to the targeted replacement fertility rate.

Introduction: In modern research especially of large-scale survey kind, the grids of conceptual language that involve both concepts, definitions, and classificatory procedure together with methodology of data collection and compilation tend to fix our sensible perception, and necessarily our thought and behaviour. It is broadly the concept that defines the situation or the phenomenon in order to classify it into what is predicted of it. For instance the word 'population' is a crucial concept in the discipline of demography that, abstracted from the multifaceted aspects of people's lives, classifies them according to such numerically observable characteristics as age, sex, marital status, reproductive age, age at marriage, employment status, fertility rate etc. The large canvas covered by demography demands that some quantitative data must be in place to have the idea of the size, composition, and distribution of population across the globe. The numbers either on cardinal or ordinal scale are assigned to individuals to derive the normative understanding of their socio-economic and cultural conditions. In this kind of approach in the population studies, one has to be on guard against the reductionism dictated by numbers alone. The living and acting body whether of individuals in particular or of population in general remains in spite of the welter of numbers the practical and theoretical leitmotif of population studies. And this is evident in the manner in which the 'body' becomes the bearer of the constellation of variables, which are predicated of it in terms of survival, death, birth, marriage, morbidity etc. These traits that the socially constituted body undergoes are observed, catalogued, and aggregated for their socio-economic relevance in the utilitarian management of society. And it becomes necessary to organize around them an apparatus, which will not only manage individuals in so far as they belong to the category of population but also constantly increase their efficiency and utility. Since the statistical treatment of numerical data (classified numerical observations on population characteristics for different cohorts) has already become the basis of new concepts, it is thus that the people are observed in quantitative contexts. . It is here historically pertinent to mention that since the late 1940s (the historical watermark is provisionally stipulated) the population statistics, and resting upon it, the population control policies have been pursued by national governments and international agencies, mostly for the poorer South. It is worth pausing for a moment to consider if the structural severance between the category "population" and the real living people

built into the technology of population studies serve the purpose of truthful representation of people—men, women and children. Right now, the literature in population studies is largely focused on the questions of fertility, maternal and child health, reproductive health of women etc. This focus is no doubt a consequence of a series of international conferences held since UN decade for women (1975). The voices of women muffled and silenced for several decades found articulation in the practical shape of their demands there. The centrality of women in population studies held the centre-stage in concentrating upon the factors that determine their fertility, health, reproductive age, marital status, contraceptive practices etc. Of particular significance is the question of reproductive age not being solely biology-specific. This is not to say that the biologic factor has no role to play, but to say that apart from it the cultural and social dimensions do have a large share in influencing the fertility of women. For instance, the demographic category of fertility steps forth into existence only in marriage in some societies, but this is not the normative pattern in many others. The International conference on Population and Development (ICPD), held in Cairo, 1994 was straddled with the questions posed by the socio-cultural practices in many societies that called for de-linking sexual activity and marriage (the example is: unwed mothers), to which existing population studies categories were not then adequate in response.

However, we will make an attempt of study of population transition of India by its important demographic characteristics in keeping with certain limitations as pointed out above. Under the aegis of the Ministry of Health and Family Welfare, India's first and second National Family Health Surveys (NFHS-l & NFHS-2) were launched in 1992-93 and 1998-99.This provided among many other things, national and state level estimates of fertility, infant mortality, family planning practices, maternal and child health care etc. Before addressing the questions of trends and levels of fertility with the observations from U.N.-2001 World population prospects, Census of India, SRS, NFHS-2 etc we are however scantily aware of the socio-economic changes that concern the women in general as a demographic cohort. We may like to assert that the women still now in unequal conditions of well-being have at least better access to health and family planning technology— the twin aspects that form the foundations of this development in different spheres of life.

Formulation of Problems: India was the first country in the world, which introduced family planning programme in the national level in the year 1952. So, if we look at fertility transition in comparison to infant mortality rate we get an idea of how India has experienced these transitions over the last few decades. These transitions will make us understand the overall demographic changes in India. United Nations has projected the total fertility rate of below replacement level as 2.10 (=2) children per woman for India. So, it will be very important to look into details about the mortality-fertility transition and the trends of life expectancy at birth of males and females. From the previous health survey (NFHS-1, 1991-92) it has been observed that the fertility has declined throughout the country. But there were striking differences among the different states/regions in fertility behaviour. The declining mortality and fertility and high chance of survival contributes to change in age-composition of population. India being the second most populous country in the world and having around 1.5 billion of population will witness a gradual transition to an ageing people. The fertility decline is also contributed by the response of women towards contraceptive practices in the rural-urban sector. In the following section we

will discuss some of the issues with respect to the replacement level of fertility as 2.10 (= 2 children per women).

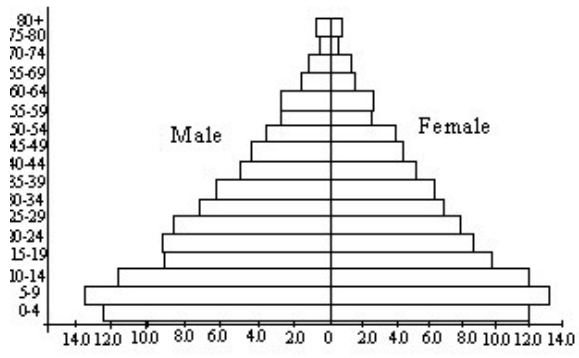
Diagnosis of the issue: It is now a well known fact that in most countries of the Asiatic Subcontinent including India, a very miniscule portion of women participated in school and university education, paid employment until recently. The age distribution of the NFHS-2 sample households and 1991 census as presented in Table1 more or less show how important India's family planning services would be over the next decade. In 1998-99, 35% of the population was between ages 5 and 20 years, a very high proportion by international standards. These will be the young

Table1

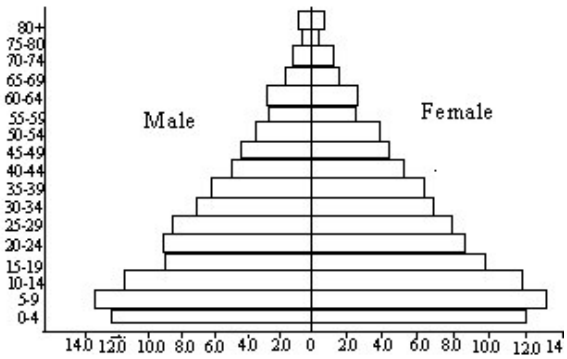
Age-specific distribution of India's population in percentage by gender

	NFHS-2(1998-99)			*Census-1991*		
Age	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
0-4	11.60	11.30	11.40	12.00	12.40	12.20
5-9	12.40	13.00	12.70	13.20	13.40	13.30
10-14	11.70	12.20	12.00	11.90	11.60	11.80
15-19	10.40	10.30	10.40	9.70	9.10	9.40
20-24	9.50	8.40	8.90	8.60	9.20	8.90
25-29	8.70	7.70	8.20	7.90	8.60	8.30
30-34	7.00	6.60	6.80	6.90	7.10	7.00
35-39	6.30	6.50	6.40	6.30	6.20	6.20
40-44	4.70	5.10	4.90	5.20	4.90	5.10
45-49	4.10	4.40	4.30	4.40	4.30	4.30
50-54	3.00	3.40	3.20	3.90	3.50	3.70
55-59	3.20	2.60	2.90	2.50	2.60	2.70
60-64	3.00	2.90	2.90	2.70	2.70	2.60
65-69	2.00	2.00	2.00	1.50	1.60	1.50
70-74	1.40	1.70	1.60	1.30	1.20	1.30
75-79	0.60	0.70	0.60	0.50	0.50	0.50
80+	0.80	0.80	0.80	0.80	0.80	0.80

Source: - NFHS-2 (1998-99), Census-1991



Population Pyramid NFHS-2



Population Pyramid Census-1991

adults who would participate in making entry into families and thus would be responsible for future rise of population. Therefore, they need to be targeted if India is to achieve replacement level of fertility of 2.10 (Total fertility rate=2.1) by the next decade. Table2 represents the estimated total fertility rate (henceforward TFR)

Table2

The scenario of fertility and mortality transition of India in terms of TFR,IMR, MLEB and FLEB

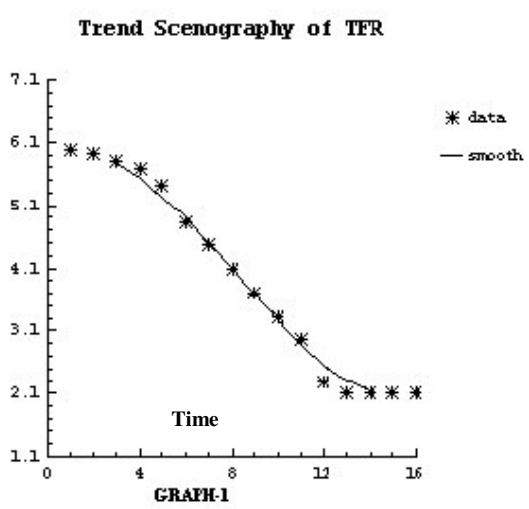
Time	*TFR*	*IMR*	*MLEB*	*FLEB*
1950-55	5.97	190	39.4	38.0
1955-60	5.92	173	43.0	41.7
1960-65	5.81	157	46.2	44.7
1965-70	5.69	145	48.7	47.3
1970-75	5.43	132	51.2	49.3
1975-80	4.83	129	53.3	52.4
1980-85	4.48	107	55.2	54.9
1985-90	4.08	94	57.6	57.8
1990-95	3.70	79	60.0	60.3
1995-00	3.32	73	61.9	62.6
2000-05	2.97	65	63.6	64.9
2010-15	2.27	49	66.8	69.0
2020-25	2.10	40	68.9	72.2
2030-35	2.10	32	71.0	74.6
2040-45	2.10	27	72.7	76.6
2045-50	2.10	25	73.5	77.4

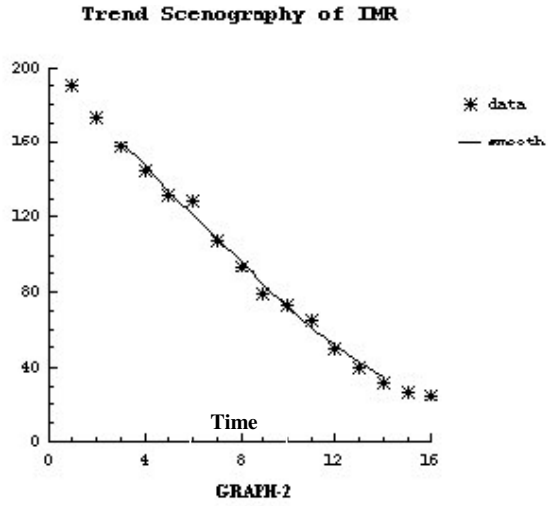
Source: - U.N.2001,World population prospects. The 2001 Revision vol.1
MLEB: - Male life expectancy at birth
FLEB: - Female life expectancy at birth

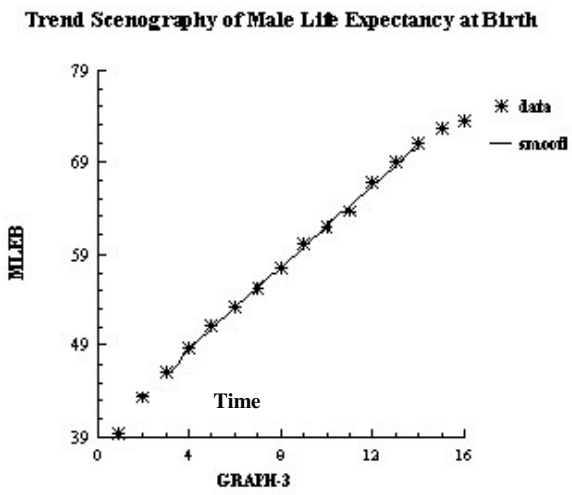
together with the infant mortality rate (henceforward IMR), female life expectancy at birth (henceforward FLEB) and male life expectancy at birth (henceforward MLEB)for India since1950s, and also the future level until 2040-50. As is visualised from the table2, it is evident that the TFR is around 6 children per woman for the period from 1950-55 to 1970-75, 4 to 5 children per woman from 1975-80 to 1995-00, with the number of children plummeting down with the passage of time. And from 2000 onward the TFR shows a declining trend and swerves around 2.10(= 2 children per woman) by 2020. India launched its family planning programme in 1952 and implemented it in realistic sense with viable infrastructure in 1960s, by 1985-90, the TFR in India dropped to 4.1(= 4 children per woman).

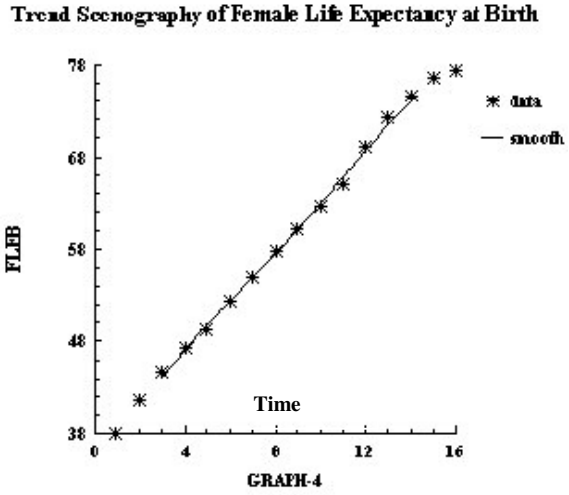
India records a comparatively high IMR and is expected to be around a little less than 70 per thousand live births. From Table2 it is also clear that, while Infant Mortality Transition (IMR) was already on its way to decline, fertility transition in India started in late 1960s and has experienced very rapid changes during last three decades. It has achieved quite fast lower levels of fertility from comparatively higher ones. The

following Graphs (Graph-1, Graph-2, Graph-3, Graph-4) show the trend scenographies of TFR, IMR, life expectancy of males and females at birth.

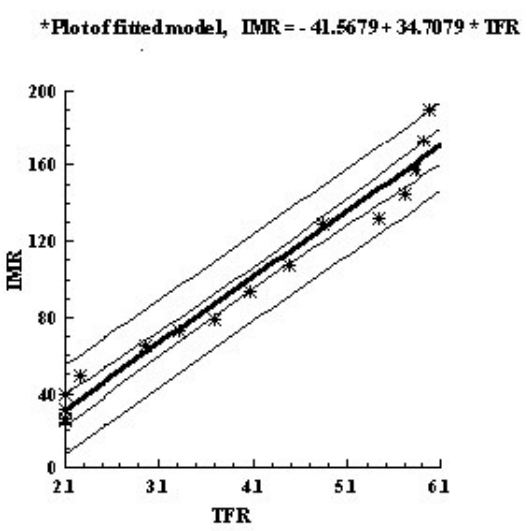




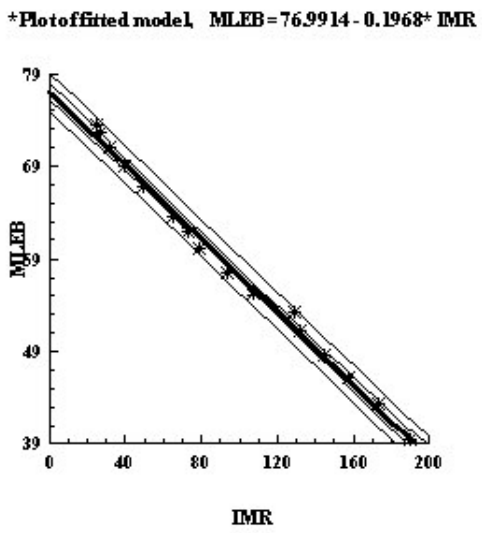




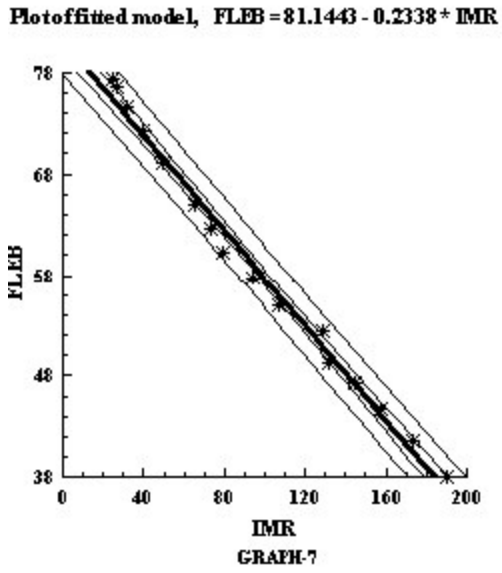
To illustrate statistically the relationship between IMR, TFR, MLEB and FLEB, linear models have been fitted between IMR and TFR, between MLEB and IMR, and between FLEB and IMR. For the relation between IMR and TFR(as shown in the notes), it has been found that p- value is less than 0.01 making us enable to interpret that there is statistically significant relationship between IMR and TFR at 99% confidence interval. The correlation coefficient has been found to be 0.98 and the R^2 statistic indicates that the model as fitted explains 96.69% of the variability in IMR. The fitted model of the relation between IMR and TFR is illustrated in the Graph-5.



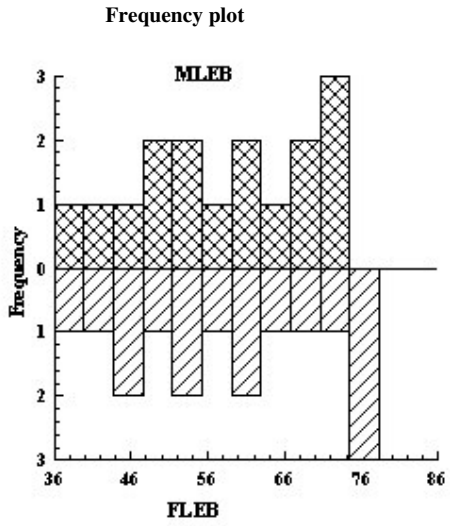
Graph5



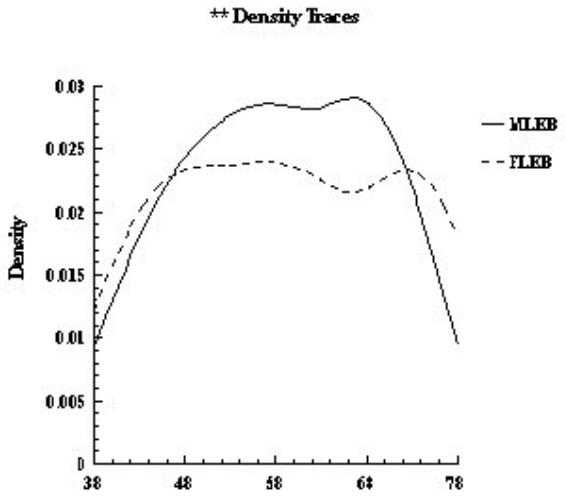
Graph6



For the fitted models(as shown in the notes) of MLEB & IMR and FLEB & IMR the p value is less than 0.01 showing that there is statistically significant relationship between MLEB & IMR and between FLEB & IMR at 99% confidence interval. The R^2 statistics for the models as fitted for MLEB and FLEB with respect to IMR are 99.35% and 98.89% respectively indicating strong relationships between each of them and IMR. The correlation coefficients between MLEB and IMR and between FLEB and IMR are -0.99 in both the cases. From the above two graphs and the statistical analyses we can interpret that as IMR has decreased, the life expectancy of males and females has considerably increased. Now to compare how the MLEB and FLEB have varied over decades, we have prepared density traces of MLEB and FLEB**, as shown in Graph9 **.

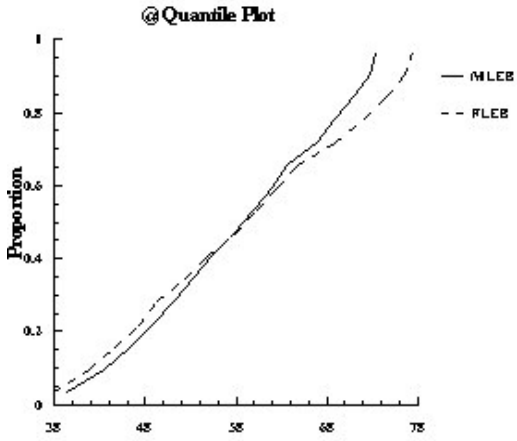


GRAPH-8

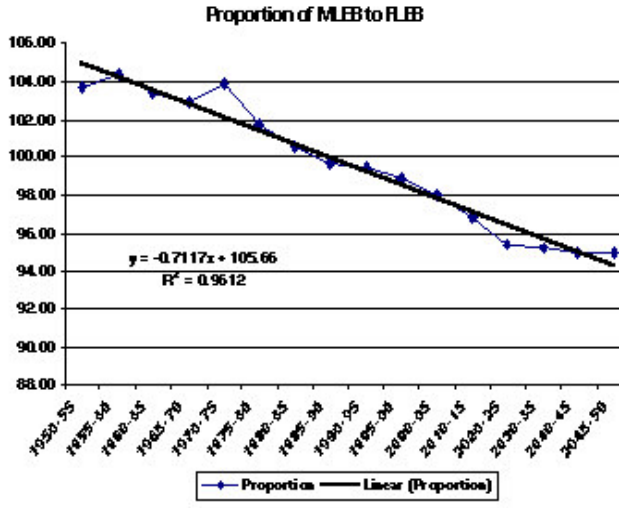


GRAPH-9

The Graph-11 showing the proportion of MLEB and FLEB also reflects some points of interest. While the proportion of male life expectancy at birth to female life expectancy at birth was greater than 100% up to 1980-85 implying more care for male children, but the proportion of life expectancy of males to that of females decreased a little afterwards and the proportion is somewhat expected to remain constant in the coming four decades (after 2010).



GRAPH-10



GRAPH-11

After discussing Mortality- Fertility transition, let us look at the scenario of different states. Table3 giving the details of provisional population totals for the country's fifteen major states is derived from census 2001. Moreover, we have shown in this table TFRs from National Family Health Survey (1998-99). The states therein have been divided into three broad regions-- the South, North, and East-- with a view to have a glimpse of fertility trends for the future with regard to these regions. It is noted

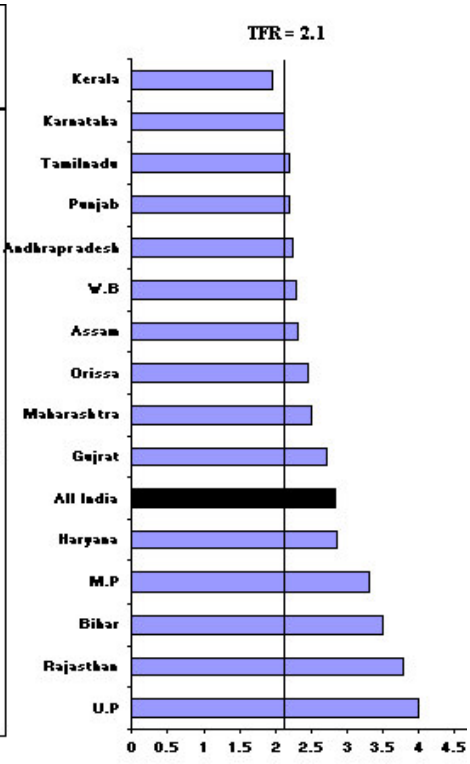
that India's states vary in population size from about 21 million in the case of Haryana to almost 175 millions in the case of the (former) state of Uttarpradesh.Ten states have the population of fifty million or more. Recently Registrar General of India have made population projections as well as generated the estimates of annual state level TFRs from early 1980s to 1993. They have also given projections of the state TFRs for the period(s) 1996-01 as well as 2011-16 and of the years when the assumed trends in total feertility imply that a TFR of 2.1 will be reached The statistics as shown in Table3 document the view that there is considerable variation of fertility within India. Of momentous significance is the fertility levels being higher in the northern states of Rajasthan, UP, MP, Bihar. In the remaining states the fertility is lower--- especially in the South. The TFR trajectory as highlighted by the Registrar General of India for 2011-16 brings home the fact that it would take around four

Table3

	Population in million 2001* (prov)	TFR NFHS-2 1998-99	RGI-Projection 1996-01 assumed TFR	RGI-Projection 2011-16 assumed TFR	Year TFR=2.1
South					
Kerala	31.8	1.96	1.62	1.60	1988
Tamilnadu	62.1	2.19	1.87	1.65	1993
Andhrapradesh	75.7	2.25	2.27	1.78	2002
Karnataka	52.7	2.13	2.54	2.01	2009
Maharashtra	96.8	2.52	2.51	1.97	2008
North					
Gujrat	50.6	2.72	2.73	2.11	2014
Rajasthan	56.5	3.78	3.91	3.06	2048
U.P	174.5	3.99	4.75	4.05	>2100
M.P	81.2	3.31	3.99	3.27	>2060
Bihar	109.8	3.49	3.92	2.93	2039
Punjab	24.8	2.21	3.92	2.93	2039
Haryana	21.1	2.88	3.25	2.47	2025
East					
W.B	80.2	2.29	2.56	1.99	2009
Orissa	36.7	2.46	2.64	2.01	2010
Assam	26.6	2.31	2.82	2.17	2015
All India	**1027**	**2.85**	**3.64**	**2.52**	**2026**

Sources:-Registrar General, India (1997, 2001), NFHS-2(1998-99).

Notes:- 1) The Census Population, 2000, are provisional. The figures shown for Up, MP, and Bihar state relate to the former jurisdiction of these states (i.e, including the recently established states of Uttaranchal, Chhatisgarh and Jharkhand, which had populations in 2001 census of 8.5, 20.8 and 26.9 respectively)
2) The all-India TFR shown for 2011-16 is the 'pooled' figure



Graph12

decades for a TFR of 2.1 to be reached for Bihar and Rajasthan, and about six decades for MP, and alas, more than a century for UP!. In 2001, it is amply clear that the four northern states of UP, Rajasthan, MP and Bihar account for 41.1 percent of India's population. In order to make any dent worthy of name in the population explosions that India is faced with right now, then the slow fertility decline in these states would not considerably contribute to the rate of national fertility decline. The TFR floor considered in Registrar General's projections is 1.6 births. Presuming the justification for this figure, only Kerala as given in Table3 would achieve it by 2011-16, even though Tamilnadu-another southern state- comes closer. Though the southern states

show lower TFR, but the states with relatively high fertility level are constituting an increasing fraction of India's population over time. It is obviously noticed that the regional composition of the population will affect the future course of all India fertility given the underlying fact that the fertility level is comparatively higher in respect of northern states. It is also observed from the graph-12 that Kerala, karnataka, Tamilnadu have achieved or nearly achieved replacement level fertility. At the other end of the spectrum, five states (Haryana, MP, Bihar, Rajasthan,UP) have fertility levels well above the national average.

Table4

Percentage distribution by age								
Time	**0-4**	**5-14**	**15-64**	**60+**	**65+**	**80+**	**Median age**	**Total population (in 000)**
1950	15.2	23.5	58.0	5.6	3.3	0.3	20.4	357561
1960	16.2	23.6	56.8	5.7	3.4	0.3	20.4	442344
1970	15.6	24.8	55.9	6.0	3.7	0.3	19.9	554911
1980	14.0	24.5	57.5	6.5	4.0	0.3	20.6	688856
1990	13.4	23.0	59.3	6.8	4.3	0.4	21.9	844886
2000	11.5	22.0	61.5	7.6	5.0	0.6	23.7	1008937
2010	9.7	19.5	65.0	8.7	5.8	0.8	26.2	1164020
2020	8.0	16.7	68.1	11.0	7.2	1.1	29.6	1291290
2030	7.6	14.8	68.1	14.0	9.5	1.5	32.9	1408923
2040	6.9	14.1	66.9	17.1	12.1	2.2	35.8	1503345
2050	6.6	13.1	65.5	20.6	14.8	3.1	38.0	1572055

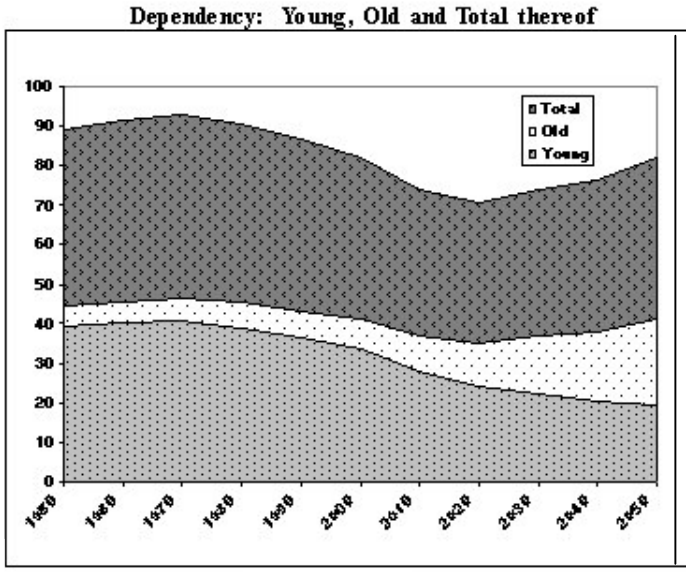
Source:- U.N.2001, World Population Prospects; The 2000 Revision vol.1

The Table4 represents the broad age composition of the population. . It may be noted that the percent population aged 15-64 years was below 60% until 1990. The percent population aged between 15 and 64 years oscillated around 60 percent during 1990s. This may be attributed largely to the constellation of two factors-- high fertility and high survival chances. India may experience a peak value of 68 percentage of population in 15-64 years of age in 2020 and would remain at this level up to 2030. This would be one of the inevitable consequences of demographic transition in India. However the percent population in the age size class of 15-64 years is expected to decline after 2030 AD, and may be around 66 percentages. The process of change in age-composition is always linked to the historical fertility and mortality transition. The upward trend in India for percentage population aged 15-64 years would continue for coming 20 years or so. . The varying pace of demographic transition is also manifested in the distribution of population between the young and old people. India in 2000 had about 7.6 percent of its population above 60 years of age. India had almost 34 percent of its population below 15 years of age in 2000. The remarkably high percentage of aged population in India is largely a consequence of its huge reservoir of population of 1.5 billion.

Table 5

Dependency Ratio for India			
Time	**Young**	**Old**	**Total**
1950	38.9	5.6	44.5
1960	39.8	5.7	45.5
1970	40.4	6.0	46.4
1980	38.8	6.5	45.1
1990	36.4	6.9	43.3
2000	33.3	7.6	40.9
2010	28.1	8.8	36.9
2020	24.0	11.1	35.1
2030	22.3	14.5	36.8
2040	20.5	17.4	37.9
2050	19.6	21.2	40.8

Source: UN 2001, World Population Prospects
The 2000 Revision vol. 1



Graph13

Table5 and Graph-13 outline the contours of dependency ratio[a], thus showing the percentage distribution of young and old people for the period from 1950 to 2050. It is observed that upto the year 1980 the young dependency was about 40 percent and old dependency was around 6 to 7 percent. With the forward passage of the years following 1980, it is to be expected with grave concern that the percentage of old people would increase, thus entailing the burden of care for them. Put other way round, it is noted that during the last 50 years (1950-2000), old dependency either has changed marginally or has changed slowly, but in future it is going to pose enormous problem of care. In India the percentage of old people may stagger at 21 percent coupled with declining dependency ratio for the youngs. The linear regression equations for dependency ratios over time for young, old and total (as shown) in the note confirms what we have been saying in this regard[b].

The ideology of planning practices in India is of such a nature, which can be understood in the light of what is said in brief about ground-level conditions obtaining. In order to have a view of the response to the family planning programme at all-India level, it is essential that we delve deep into the details of knowledge, attitude, practice of the family planning across the states and see how it has been accepted by currently married women. There is at present no two-opinion on the fact that the knowledge of family planning has been so much pervasive among people especially women that about a little less than fifty percent of currently married women interviewed had ever used a contraceptive method, 49.3 percent had used any modern method, and 11.8 percentage had ever used traditional method. Table5 and Table6 illustrate both the knowledge of contraceptive methods the currently married women had at the time of interview and the use ever made by them. When it comes to current

use (Table8), there is a turn-about in the ever-use scenario in so far as a meagre 48.2 percentage of women used family planning method, with 42.8% currently using any

Table6

Knowledge of contraceptive methods among currently married women, aged 15-64 (in percent)

Method	*Urban*	*Rural*	*Total*
Any	99.7	98.7	99.0
Any modern method	99.7	98.6	98.9
Pill	91.5	75.2	79.5
IUD	87.8	64.6	70.6
Condom	88.0	64.9	71.0
Female sterilization	99.3	97.8	98.2
Male sterilization	93.6	87.8	89.3
Any traditional method	60.3	44.9	48.9
Other method*	3.1	2.6	2.7

* including both modern and traditional methods that are not listed separately
Source: NFHS-2(1998-99)

modern method. There is at the same observed the urban-rural dichotomy in the current use of contraceptive method, with 58.2 percentage in urban India and44.7 percentage in rural India. If we look at Table9 giving the details of percentage distribution of currently married women by different contraceptive methods in current use across state, we will be sruck with the hard fact that, as said earlier, the states of Rajasthan, UP, MP and Bihar do have a large share of currently married women not using any contraceptive method, with Rajasthan

Table7

Currently married women ever used contraceptives (in percent)

Method	*Urban*	*Rural*	*Total*
Any	67.2	50.8	55.1
Any modern method	61.0	45.2	49.3
Pill	11.4	7.4	8.4
IUD	11.4	3.5	5.6
Condom	16.8	4.8	7.9
Female sterilization	36.0	33.5	34.2
Male sterilization	1.9	2.1	2.0
Any traditional method	15.1	10.6	11.8
Other method*	1.2	1.0	1.0
Not used any method	32.8	49.2	44.9

* including both modern and traditional methods that are not listed separately
Source: NFHS-2(1998-99)

recording 59.7 percentage point; UP, 71.9 percentage point; MP, 55.7 percentage point; Bihar, 75.5 percentage point. At all India level the percentage of currently married women not using any method is put at 51.8 . It is also to recall that among the India's most populous states, modern contraceptive use is the lowest in Uttarp radesh

Table8

Current use of modern contraceptives among currently married women aged 15-49

Method	*Urban*	*Rural*	*Total*
Any	58.2	44.7	48.2
Any modern method	51.2	39.9	42.8
Pill	2.7	1.9	2.1
IUD	3.5	1.0	1.6
Condom	7.2	1.6	3.1
Female sterilization	36.0	33.5	34.2
Male sterilization	1.8	1.9	1.9
Any traditional method	6.7	4.4	5.0
Other method*	0.3	0.4	0.4
Not used any method	41.8	55.3	51.8

* including both modern and traditional methods that are not listed separately
Source: NFHS-2(1998-99)

and Bihar (28.1 percentage and 24.5 percentage of currently married women respectively), followed by Assam (43.3 percentage), and Rajasthan (40.3 percentage). Current use of modern temporary methods is spectacularly low in Bihar (2.2 percentage) and in Andhrapradesh (1.8 percentage), though Andhrapradesh

Table9

Percentage distribution of currently married women by contraceptive methods currently used across states

	Any Method	*Any Modern Method*	*Other Modern Method*	*Female Sterili-zation*	*Male Sterili-zation*	*Any Tradit-ional Meyhod*	**Other Method*	*Not Using Any Method*	*Prov. 2001 Census Population*	*NFHS-2 TFR*	*Year Replace ment TFR*
South											
Kerala	63.7	56.1	5.1	48.5	2.5	7.6	0.0	36.3	31.8	1.96	1988
Tamilnadu	52.1	50.3	4.3	45.2	0.8	1.8	0.1	47.9	62.1	2.19	1993
Andhrapradesh	59.6	58.9	1.8	52.7	4.3	0.5	0.2	40.4	75.7	2.25	2002
Karnataka	58.3	56.5	4.4	51.5	0.7	1.7	0.1	41.7	52.7	2.13	2009
Maharashtra	60.9	59.9	7.6	48.5	3.7	1.0	0.1	39.1	96.8	2.52	2008
West											
Gujarat	59.0	53.3	8.1	43.0	2.3	5.6	0.1	41.0	50.6	2.72	2014
Rajasthan	40.3	38.1	5.8	30.8	1.5	1.9	0.3	59.7	56.5	3.78	2048
North											
U.P	28.1	22.0	6.4	14.9	0.7	5.7	0.4	71.9	174.5	3.99	>2100
M.P	44.3	42.6	4.7	35.7	2.2	1.4	0.3	55.7	81.2	3.31	>2060
Punjab	66.7	53.8	23.0	29.3	1.6	12.4	0.4	33.3	24.8	2.21	2039
Haryana	67.7	60.8	8.4	45.1	7.3	6.8	0.2	32.3	21.1	2.88	2025
East											
Bihar	24.5	22.4	2.2	19.2	1.0	1.6	0.5	75.5	109.8	3.49	2039
W.B	66.6	47.3	13.5	32.0	1.8	18.5	0.9	33.4	80.2	2.29	2009
Orissa	46.8	40.3	4.7	33.9	1.7	5.6	0.9	53.2	36.7	2.46	2010
Assam	43.3	26.6	10.0	15.7	1.0	15.8	0.8	56.7	26.6	2.31	2015
All India	**48.2**	**42.8**	**6.8**	**34.2**	**1.9**	**5.0**	**0.4**	**51.8**	**1027**	**2.85**	**2026**

** including both modern and traditional methods that are not listed separately
Source: NFHS-2(1998-99)

has achieved replacement or near replacement of fertility despite such low use of temporary methods. Through the years India's family planning programme has focussed primarily on sterilization. Because of the emphasis on sterilization most Indian couples especially in the rural sector think of family planning as a means of

stopping child bearing rather than a means of spacing births. A young woman currently married is likely to discontinue contraceptives for expectation of more children in the future. On the other hand, the older women are prone to discontinue for menopause. It is however not disputed that the response of women to the use of contraception varies with age and the dimension of rural-urban differential in attitude, and the knowledge of contraceptives. It is relevant to say that the dichotomous rural-urban residence is a contributory factor in regard to the degree of contraceptive use for the reasons of different work and time compulsion in the urban milieu.

Conclusion: India is expected to reach replacement level of fertility during 2020-25. However it may be mentioned that National Population Policy 2000 of India has drawn strategies to achieve replacement level by 2010.It may be predicted going by the trend of TFR movement in the past, that India would never reach below replacement, thus allaying the fear of disastrous fall of population in absolute terms more than what is dictated by the trade-off between population and resource of this country. It is however not without reason to hypothesize that there would be many areas/regions in the country which would go below the replacement level

One of the inevitable direct consequences of such demographic transition, as we have discussed, would be a change in the age composition of national population that would shift its share from the young to the elderly. These changes in age structure have very important demographic, socio-economic and health implications. The need for goods and services, such as jobs, housing, social economic support, health etc. would also undergo changes. Accompanying such changes are also the increase in urbanization, nuclearization of family, greater mobility of child(ren), and psychological support in old age. This would usher in unprecedented change in socio-economic condition.

On the other hand there is a peculiar advantage of such demographic change before India unlike the countries of the West experiences the shrinking of labour force population, which has implications not only for living arrangements but also for social security, physico-emotional and economic support for dependents (especially elderly people). It is speculated that the provision of care to such a 1.5 billion-size population including the sizeable proportion of the aged people would be a Herculean task. And therefore, in addition to Government's greater commitment to care (social as well as health) of elderly people, there is need for policy intervention to reinforce the existing family support, which in the conditions of modernity is gradually crumbling down.

With the forward passage of the years following 1980, it is to be expected with grave concern that the percentage of old people would increase, thus entailing the burden of care for them. Put other way round, it is noted that during the last 50 years (1950-2000), old dependency either has changed marginally or has changed slowly, but in future it is going to pose enormous problem of care. The National Family Health Surveys conducted in 1992-93 and in 1998-99 hold the picture that the traditional family support is still available to the elderly in India. About 88 percent of elderly in 1992-93 and 86 percent in 1998-99 afford to live in at least two-generation family set-up with children

The Government of India in their efforts to reduce the fertility level and ameliorate the well-being of families provide family planning methods and services through

Primary Health Centres and sub-centres in rural areas and through such facilities as Govt. Hospitals and family welfare centres in towns and cities. No prgramme of family welfare worth its name can be effective if it does not tend to cater to the needs of concerns for women at large.

India no doubt is a female deficit country if we go by the sex ratio of 108 according to the Census 2001.Family planning practices among women testify to the conviction that the large family size is still held as an asset by around eighty percent of population or at least poses no grave situation. For this cohort of people steeped in the morass of poverty, illiteracy, inequity, every additional mouth brings with it two extra hands. The evidence of this is underpinned by the observations of the World Development Report wherein it is stated that the decision to have many children is no doubt a sensible response to poverty, especially due to high mortality for children in economically destitute families. Such conditions as this make it essential for them to ensure that some children survive to lend support to households in the parent's old age. Poverty, inequality, population growth are intertwined in many ways: several scholars come up with the assertion that there can not be over-population in a society based upon principles justice, equality, reason for the sole reason that there must exist factors that counteract excessive population increase. What is of utmost importance in this juncture of circumstances is not just formal impetus of "growth for justice" but "growth with justice". In regard to what is evolving as a pattern of development in developing countries including India, one can not but encounter the fact that they are thrown in a difficult, or conflicting choice. It is either to lay emphasis on the growth rate of their gross national product (GNP), and disregard the growth of employment or spend the scanty national resources on expanding employment to the detriment of economic development. In fact, economic development has a distinctly disproportionate nature and is accompanied by aggravating contradictions. There is a strongly prevalent perception among the masses in the lower echelons of society, particularly in rural India, that the large number of thriving children is as much a valuable social good as goods circulating in the market. And this is considered a good not only in a manner and restricted economic sense but also in a culturally meaningful sense, " More children" means old age security, and pooled family income etc. Is it not search of the poor for safety-economic and otherwise--in the number of their offspring? Commenting on the general belief that the population pressure exacerbates poverty, Barry Commoner in his celebrated book 'Making Peace with the Earth' has described situation as of painful global ironies. In his view, the poor countries while deprived of an equitable share of the world's wealth suffer what is called the scourge of over or surplus population in addition to environmental hazards generated by the creating of that wealth. In the same logic, the adoption of labour-saving and capital-intense modern technology (eg, mechanization, automation, intensified use of chemical fertilizers, pesticides etc.) in the name fighting hunger has far from contributing to elimination of malnutrition engineered the concentration of rural poverty, increasing hunger and malnutrition.

In our country though the greying of the population is an inevitable consequence due to sharp fall in declining fertility levels, still caring for old will not suffice, if we only look at their special needs for health care, housing etc. Emotional and family support, respects for the aged etc. are some of the aspects, which also need to be considered from a different and broad socio-political angle.

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Notes: -

* To understand statistically the demographic relationship between population characteristics like TFR, IMR, MLEB, FLEB we have fitted linear regression equation between IMR, and TFR, MLEB and IMR, and FLEB and IMR. These are

i) IMR= - 41.5679 + 34.7079 TFR

R^2 = 96.69%, P-value <0.01
Correlation coefficient = 0.98

ii) MLEB = 76.9914 – 0.1966790 IMR
R^2 = 99.35%, P-value <0.01
Correlation coefficient = - 0.99

iii) FLEB = 81.1443 – 0.233757 IMR

R^2 = 98.89%, P-value <0.01
Correlation coefficient = - 0.99

**: A density trace is basically a smoothed histogram, which shows the shape of each distribution. The trace is constructed by counting the no. of observations within an interval of fixwd width as it is moved along x axis (here time- periods) and weighing them in such a way as to give a smooth estimate of the under lying density function.

@ Running a Kolmogorov-Smirnov test to compare the distribution of the two variables it has been found that p- value as 0.53033 This test is performed by computing the maximum distance between the cumulative distribution of the two variables (here MLEB and FLEB. In this case the maximum distance is 0.1875 which can be visually seen from the quantile plot. It can be interpreted that there is not any statistically significant difference between the two distributions at the 95.0% confidence interval implying that MLEB and FLEB have almost shown the same kind of transition. The quantile plot for data of two variables of MLEB and FLEB also show that the two curves are closer together and hence their respective distributions may be assumed more or less alike.

a: The dependency ratio is the ratio of the non-working age population(under 15 years old and over 64 years old) to the working-age population (ages 15 to 64)

b: The fitted linear regression equation between the Young, Old and Total dependency ratios over time (X) are as follows:

i) For young,

Y = -0.2417X + 514.41

ii) For old,

Y = 0.1467X - 283.34

iii) For Total,

Y = -0.0946 + 230.47

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