Population and Development

A Discourse on Family Planning in Uttar Pradesh

Purpose of the brief

This policy brief takes a look at the progress made by Uttar Pradesh (UP) with respect to the family planning and the reproductive and child health indicators in the state, and the impact of increasing population on the health of the people, and overall development and resources of the state. The brief has two sections. In Section I data from the National Family Health Survey (NFHS), Sample Registration System (SRS), Census 2011, Annual Health Survey (AHS), and the Registrar General of India (RGI) Population Projections 2006 has been analysed to inform the national- and state-level policymakers and experts on the current status of UP's family planning programme and projections of the impact of increased population on food, education, health and employment needs of the state. Section II presents population projections to inform the future course of population dynamics, estimate the resources required for family planning, and highlight the state's contribution to the achievement of the country's replacement level of fertility. The elaborate exercise of developing these projections was undertaken in 2012–13, and thus considers AHS, 2010–11 data.

Some facts on Uttar Pradesh's Population

- Only four countries—China, United States of America, Indonesia and Brazil—are more populous than UP.

- The population density of UP is 828 people per sq. kilometre, the highest in the country.

- UP's population has quadrupled in the last sixty years.

- Over the last decade, the population of the state has increased by over 25.8 per cent.

- Out of the 200 million population of the state, nearly 78 per cent lives in rural areas across around 100,000 villages—the largest rural population as per Census 2011.

Increasing population in Uttar Pradesh

Situated in the heart of India, UP is the most populous state in the country. As per Census 2011, UP's population stands at 200 million (20 crore), making it home to one-sixth of the country's population.

Since independence, UP's population has increased by almost 10 million per decade between 1951 and 1971, by 20 million per decade between 1971 and 1991, and by 30 million between 1991 and 2011. (Figure 1).

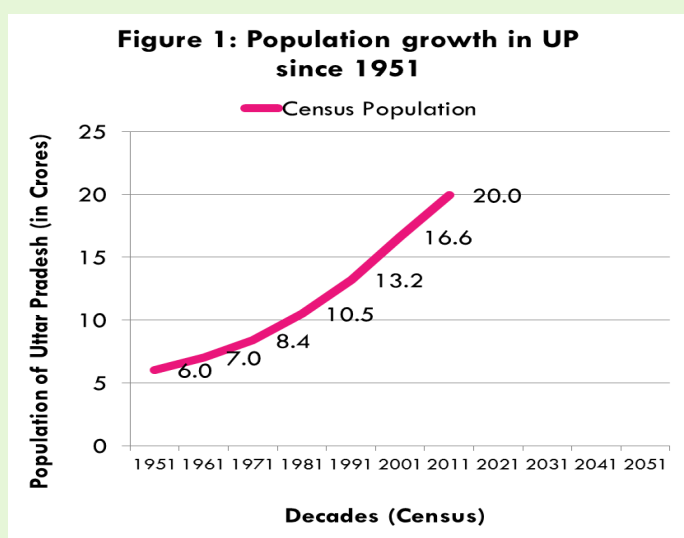**Figure 1: Population growth in UP since 1951**

Figure 2 shows district-wise total fertility rate (TFR) —the average number of lifetime births per woman by the time she reaches age 50—in UP, which ranges from 2.2 in Kanpur Nagar district to as high as 5.8 in Shrawasti district. Around 82 per cent of the districts have a TFR higher than 3 and 13 per cent have a TFR more than 4 as per the AHS, 2010–11. Table 1 categorises the districts of UP according to their TFR.

Table 1: Districts of UP categorised as per their TFR.		
TFR (AHS, 2010-11)	**# of Districts**	**%**
above 4	13	18.6
3.5-3.9	21	30
3.0-3.4	25	35.7
2.5-2.9	11	15.7
TOTAL	70	100

Stagnating fertility decline a cause for concern

UP's TFR dropped significantly in the early 1990s but the pace of decline has levelled off since then. Currently the TFR is 3.3 children per woman (SRS, 2012). According to RGI (2006), UP is likely to achieve replacement-level

Figure 2: Districtwise TFR in UP. Source: AHS 2011-12.
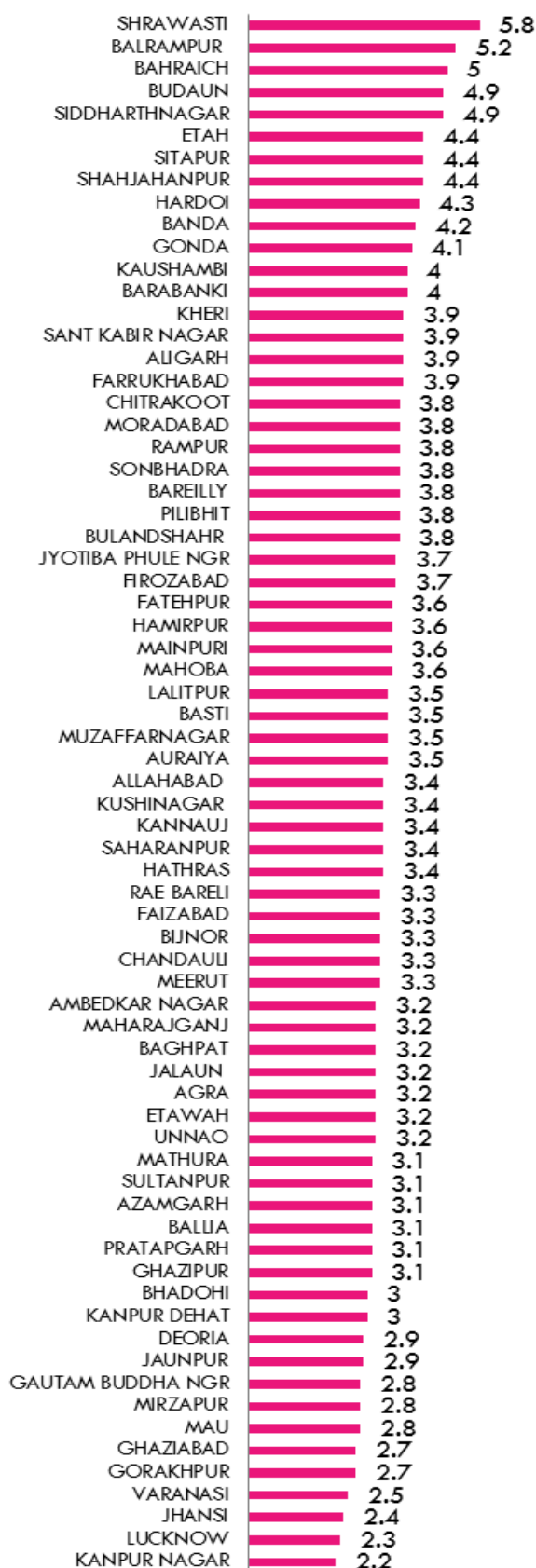
fertility (2.1) by 2027. With this trend UP will cross 310 million (31 crore) mark by 2051 (DemProj Projection 2006). Dem Proj projects a population by age and sex and is based on assumptions about fertility, mortality and migration.

Figure 3: Trend in TFR in UP, since 1981.
Source: SRS 1981–2012.

Address the drivers of increase in population

Increase in population is a cumulative effect of fertility and mortality indicators, along with socioeconomic determinants. Key actions requiring urgent attention to ensure a check on the increasing population include:
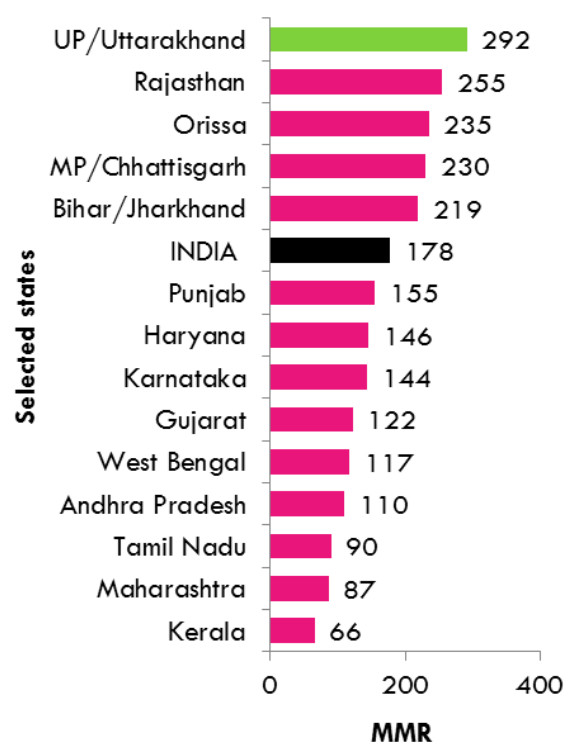
Reducing early marriage: Early marriage increases the length of time for which a girl is exposed to pregnancy, which in the absence of use of an FP method can lead to higher levels of fertility affecting the overall population momentum. This is one of the key issues affecting UP, with around 55 per cent girls getting married before the age of 18 years (DLHS-3, 2007–08). Recent AHS (2011–12) data shows that 38.5 per cent of the currently married women (ages 20–24 years) are married before the legal age of 18 years.

When girls complete schooling and higher education, and are gainfully employed, they get married at a later age, plan their families and become socially and economically empowered. Thus, increasing enrolment of girls in school, reducing their dropout rates, and providing opportunities for higher education and employment become imperative. State departments also need to increase: health and life-skills education in schools; counselling of young women by Accredited Social Health Activists (ASHA) and Auxiliary Nurse Midwives (ANM); and other door-to-door and mass media campaigns.

Reducing early childbirth: Early marriage is potentially linked to early childbirth, as it keeps the fertility levels high. As per AHS, 2011–12, 43.1 per cent women ages 15–19 years in UP were already mothers or pregnant at the time of the survey. Improved health education and engagement at the community level by ASHAs and ANMs can help change social norms around expectations of first child immediately after marriage.

Improving Maternal Mortality Ratio: Women who begin childbearing when they are younger than 18, are also at increased risk of complications during their pregnancy and during delivery. UP's maternal mortality ratio (MMR) was 517 in 2003. It has come down to 292 (SRS, 2012). However it continues to be highest amongst all the states. The pace of progress will need to be accelerated in order to reach the UP Population Policy goal of maternal deaths below 250 per 100,000 births by 2016. There is a need to improve health service delivery, ensure availability of supplies and equipment, effective utilisation of funds, provide rigorous follow up and continuum of care.

Figure 3: Maternal Mortality Ratio in select Indian states. Source: SRS 2012.

| Selected states	MMR
UP/Uttarakhand	292
Rajasthan	255
Orissa	235
MP/Chhattisgarh	230
Bihar/Jharkhand	219
INDIA	178
Punjab	155
Haryana	146
Karnataka	144
Gujarat	122
West Bengal	117
Andhra Pradesh	110
Tamil Nadu	90
Maharashtra	87
Kerala	66

Bringing down Infant and Under-Five Mortality Rates: The death rates of infants and children under the age of five in UP have declined substantially in the past decade at 53 and 68 respectively (SRS, 2012), though the state is still lagging behind many states (infant mortality rate–IMR and under-five mortality rate for India is 42 and 52 respectively). The under-five mortality rate in UP is amongst the highest in the country. The state needs to make focused attempts to improve the IMR and under-five mortality further by ensuring universal immunisation coverage; early detection and treatment of diarrhoea, pneumonia and malnutrition; community activation for wellbeing of children through the Village Health and Nutrition Days; improved access to quality nutrition supplementation at the anganwadi centres; and reduction in harmful traditional practices for treatment of childhood illnesses.

Improving contraceptive use among currently married women: The contraceptive prevalence rate (CPR)—the proportion of women of reproductive age using (or whose partner is using) a contraceptive method at a given point of time—in UP is 31.8 per cent for any modern method (AHS, 2011–12). The CPR in India (as per DLHS-3, 2007–8 estimates) is 47.1 per cent. State health department needs to increase access to quality contraceptive products and services through door-to-door delivery, postpartum intrauterine contraceptive device (IUCD) for women who are delivering under Janani Suraksha Yojana, increasing male involvement and adoption of sterilisation, family planning week celebrations, increased demand generation and health education efforts at the community level.

Figure 4: IMR in select Indian states. Source: SRS 2012.
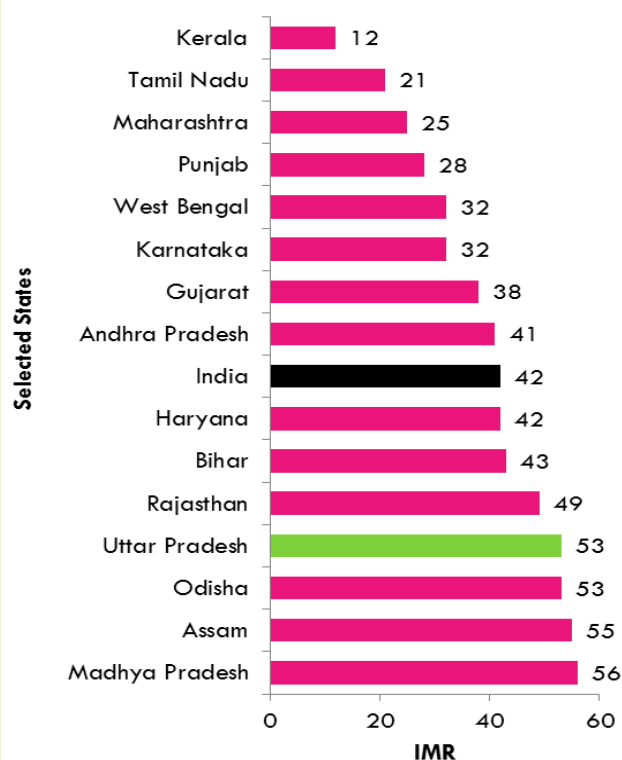
Addressing high unmet need for family planning: Unmet need is defined as the proportion of women who want to delay or limit childbearing but are not using any family planning method (traditional or modern). Based on the AHS, 2011–12 data, 29.7 per cent currently married women in UP have an unmet need for family planning (spacing=17.1% and limiting=12.6%). The national figures for unmet need are 21.3 per cent (DLHS-3).

## Impact of population growth on social and economic development, and people's welfare

With the current rate of growth, the population of UP will cross 300 million (30 crore) by 2051. The rapidly growing population will affect UP's economic growth and commitment to improving the living standards of its citizens. This section presents projections of the impact of increased population on food security, education, health and employment needs of the state. These projections were developed using policy models, including DemProj and RAPID. They consider a high fertility scenario in which the replacement level of fertility is reached by 2027 as estimated by the RGI Population Projection, 2006. Following are the highlights of this analysis.

Increased spending on education with higher education: A rapidly growing student population in UP will require additional resources to build schools and train, recruit, and retain more teachers. The

Figure 5: Number of primary school teachers needed (in lakhs). Source: District Information Systems for Education. Data from Census of India and RAPID Projections
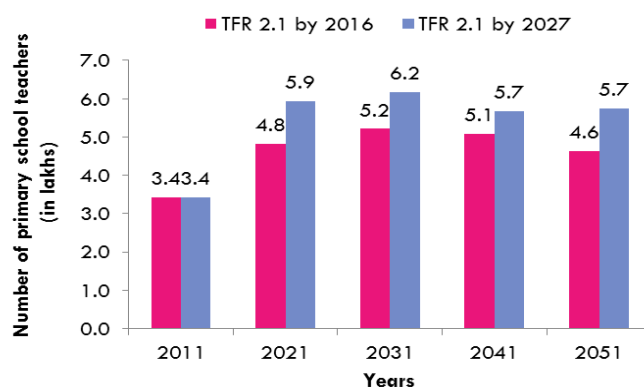
Right-to-Education Act mandates an optimal student-teacher ratio of 30:1 for all Indian schools. As per the District Information System for Education, the student-teacher ratio in UP is 52:1. Rapid population growth impedes the government's ability to provide free universal access to education and overcome challenges identified. Data indicates that states with lower TFRs have better pupil-teacher ratio.

If it is assumed that the state achieves replacement level of fertility in 2027, then UP will require 5.7 lakh more primary school teachers by the year 2051 to cater to the increased population.

Health: The World Health Organization (WHO) recommends a 1:1,000 doctor-population ratio. As per the Medical Council of India (MCI) Records, the doctor-population ratio in India is 1:1,700 (MCI, 2011). In comparison the ratio in UP is 1:3,789, and a higher fertility rate in the state will put immense pressure on the system for a substantially higher number of doctors. It is estimated that to achieve Kerala's current ratio (1:953) by 2051, UP would require an additional 3.6 lakh doctors.

Employment: Currently, more than eight per cent of India's population is unemployed and both skilled and unskilled labourers are unable to find jobs. Lack of employment opportunities has fuelled migration into cities. In UP, 8.6 per cent of the population between 15–59 years is unemployed (Employment and Unemployment Survey, Ministry of Labour and Employment, 2009–10). With unchecked population growth, the number of youth entering the job market will be higher. It is estimated that an additional 302 lakh (30.2 million) jobs will be required in UP by 2051.
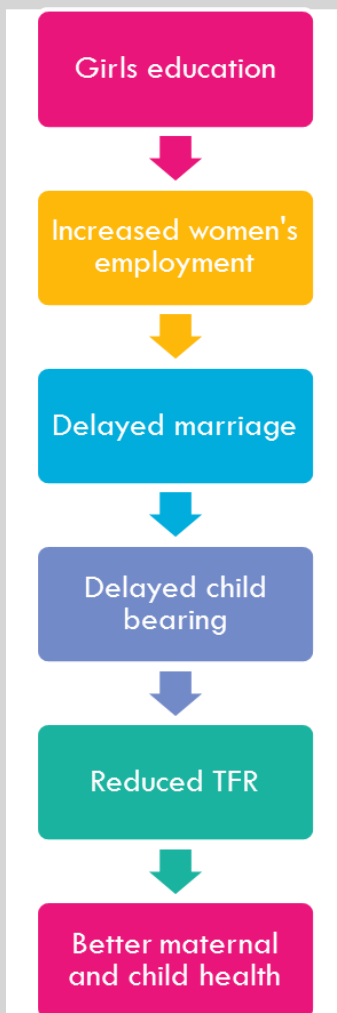
Water and electricity: Water and electricity are interdependent. In India the demand for water and electricity is increasing at an alarming rate but shortages are rampant. According to Census of India, 2011, 12 per cent of households do not have access to safe drinking water (i.e. tube well, tap or hand pump water). About 40 lakh households do not get safe drinking water as of today. In UP, 63.2 per cent of households do not have electricity supply.

If UP is unable to meet its population goals, the issues around the provision of safe water and electricity will get compounded. It is estimated that UP will need to provide electricity to an additional 12 crore (120 million) households by 2051 and safe drinking water to 1.5 crore (15 million) (cumulative) households.

Family planning saves lives

Investing in family planning will help improve health and development in UP. In this direction following actions would be required:

- **Help couples in UP achieve desired family size.** Although the current TFR is 3.3 children per woman, couples in UP want to have smaller families—on average about 2.3 children (based on data from the NFHS-3, 2005–06).

- **Reduce childbearing risks.** High-risk births are a major cause of illnesses, disability and premature death among mothers and children (Feranil and Borda, 2008). High-risk births are defined as those that are spaced less than two years apart or born to mothers who are younger than 18 or older than 34, or who have more than three children (NHFS-3). Analysis of the NFHS data indicates that about half (51%) of deaths in UP fall under one or more higher risk pregnancy categories due to the mother's age, repeated childbearing, and/or short birth intervals:

Girls education → Increased women's employment → Delayed marriage → Delayed child bearing → Reduced TFR → Better maternal and child health

– Too early (when the mother is younger than 18 years): 12 per cent
– Too late (when the mother is older than 34 years): 25 per cent
– Too often (when the mother has had three or more births): 40 per cent
– Too soon (when the birth occurs less than two years after a previous birth): 24 per cent

Save lives: As per expert estimates widespread use of family planning could lower MMR by 20 per cent and IMR by as much as 25–30 per cent in developing countries. Spacing pregnancies farther apart can help women affected by anaemia and malnutrition become healthier and better prepared for pregnancy in the future and thus, have healthier babies. For women for whom pregnancy poses substantial health risks and for those who do not want any more children, voluntary sterilisation can be an option to prevent pregnancy permanently.

Addressing socioeconomic factors like women's education and employment leads to an improvement in their fertility indicators, and maternal and child health indicators.

Population projections and expected levels of achievement for Uttar Pradesh

This section presents the expected levels of achievement (ELA) for UP to address its unmet need for family planning along with the population projections for UP till 2022. The projections include the increase in population, projected number of acceptors of family planning methods, the increased demand for contraception, and projections of IMR and under-five mortality rate. In keeping with the urgent need to address the family planning requirements in the state, these projections are intended to inform the family planning programme and help the state gear up for future requirements to strengthen the family planning programme. The elaborate exercise of developing these projections was undertaken in 2012 and thus considers AHS, 2010–11 data.

A. Inputs and projection period

The population projections and the estimation of ELAs in UP and India took into consideration a set of inputs and assumptions. Two scenarios were considered—one with changed method mix and the other with an unchanged method mix.

To compute the population projections, the universally accepted "Component Method" has been used. As per the method the population growth of a given geographic location is determined by three components: fertility, mortality, and migration.

SPECTRUM Suite, a software package developed by Futures Group, was used to compute population projections and ELAs. In particular two models—DemProj and FamPlan—have been used to project the population and family planning requirements needed to reach the national goals to address the unmet need.

In view of the two subsequent plan periods (12th and 13th five-year plans), the projection period has been determined as 2011–22.

B. Assumptions and goal setting

The goal of reaching the unmet need for contraception has been fixed while keeping in mind the estimates of reaching the TFR of 2.1 provided by the Expert Committee on Projections, 2005–2006 (Office of the Registrar General of India, 2006). It is assumed that the unmet need for contraception will not fall beyond 4.7 per cent (Andhra Pradesh's level, NFHS-3, 2005–06), which has been the lowest in the country.

The overall goal is to "meet 60 per cent of the current unmet need for family planning (29.7%, AHS, 2010–11)." This will result in increasing the modern CPR from 31.4 per cent in 2010–11 to 48.6 per cent in 2022.

C. Scenarios for projections

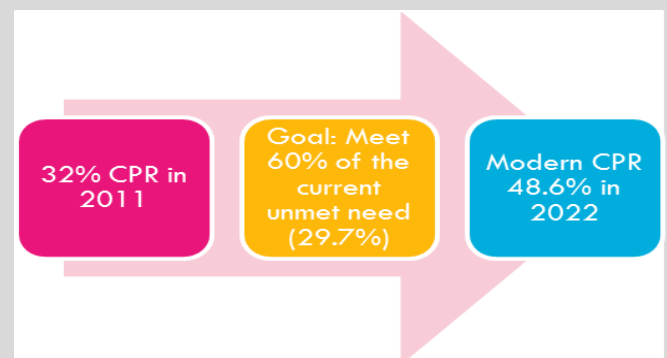Two scenarios have been created for population projections and ELAs:

Scenario A: Change in method mix proposed (based on the state's current level) for the projection period (2011–22).

Scenario B: The method mix will remain unchanged during the projection period (2011–22).
Currently, the method mix in UP is 56.4 per cent (at the AHS, 2010–11 level) for limiting methods against 43.6 per cent for spacing methods. If UP has to reduce 60 per cent of its current unmet need, the CPR will need to increase from the current 32 per cent (AHS, 2010–11) to 48.6 per cent in 2022 (projected figures).

For UP, as per Scenario A the change in method mix proposed, based on the state's current level—for the projection period (2011–22)—is 70 per cent of limiting methods and 30 per cent of spacing methods.

Scenario B with unchanged method mix during the projection period proposes 56.3 per cent limiting methods and 43.6 per cent spacing methods.

32% CPR in 2011 → Goal: Meet 60% of the current unmet need (29.7%) → Modern CPR 48.6% in 2022

D. Population projections

Table 2 presents the projected population for India and UP as part of the two different scenarios. India's population is likely to exceed 1.306 billion by 2017 before reaching 1.381 billion in 2022. UP will add 22 million by 2017, and an additional 17.7 million by 2022 as per these population projections. The projections indicate that UP along with Madhya Pradesh, Bihar, and Rajasthan will become a challenge for India in the near future, as the proportion of their populations to the country's population is likely to increase from 36.8 per cent in 2011 to 40 per cent in 2022.

State	Table 2: Projected Population as per Scenario A (Millions) for Uttar Pradesh (Limiting = 70%, Spacing = 30%)								
	2011			**2017**			**2022**		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Uttar Pradesh	104.6	95.0	199.6	116.2	105.4	221.6	125.7	113.6	239.3
India	623.1	587.4	1210.6	671.5	634.3	1305.9	708.7	669.8	1378.5
	Projected Population as per Scenario B (Millions) (Limiting= 56.4%, Spacing= 43.6%)								
Uttar Pradesh	104.6	95.0	199.6	116.3	105.4	221.7	126.1	114.0	240.0
India	623.1	587.4	1210.6	671.6	634.4	1306.1	709.1	670.2	1379.3

E. Contraceptive method mix

If UP has to reach 48.6 per cent CPR by 2022, it has to address 60 per cent of its current unmet need (total=29.7%, spacing=17.1% and limiting=12.6%, AHS, 2010–11). UP will have to change its current method mix. Instead of the current method mix of 56.4 per cent for limiting and 43.6 per cent for spacing (Scenario B), UP will have to adopt a method mix of 70 per cent limiting and 30 per cent spacing (Scenario A), whilst ensuring improved counselling for clients to make informed and voluntary choices and provision of quality services, and not loosing momentum of the uptake of spacing methods.

Scenario A will see a nearly threefold increase in adopters of limiting in 10 years. Table 3 and 4 present the projected number of acceptors of spacing and limiting methods under both the scenarios.

	Table 3. Projected number of acceptors for spacing methods: Scenario A, if Uttar Pradesh and India change the method mix											
	(Limiting = 70%, Spacing 30%) Numbers (Million)											
State	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
UP	4.99	5.25	5.31	5.42	5.59	5.7	5.79	5.9	5.98	6.04	6.13	6.27
India	31.04	32.52	33.12	33.74	34.34	34.89	35.42	35.97	36.49	36.98	37.44	37.92
	Projected number of acceptors for spacing methods: Scenario B, if Uttar Pradesh and India continue as today (Limiting= 56.4%, Spacing= 43.6%)											
UP	5.1	5.3	5.5	5.9	6.3	6.7	7.1	7.5	8	8.5	9	9.7
India	31.04	32.08	33.0	33.9	34.96	35.91	36.85	37.84	38.82	39.79	40.75	41.7

	Table 4. Projected number of acceptors for limiting methods: Scenario A, if Uttar Pradesh and India change the method mix											
	(Limiting = 70%, Spacing 30%) Numbers (million)											
State	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
UP	0.41	0.67	0.8	0.99	0.97	1.03	1.16	1.23	1.3	1.47	1.77	1.95
India	5.17	5.05	5.3	5.34	5.37	5.39	5.66	5.7	5.75	5.81	5.88	6.07
	Projected number of acceptors for limiting methods: Scenario B, if Uttar Pradesh and India continue as today (Limiting= 56.4%, Spacing= 43.6%)											
UP	0.41	0.5	0.6	0.75	0.7	0.73	0.82	0.84	0.87	0.98	1.18	1.28
India	5.14	4.85	5.07	5.1	5.12	5.12	5.36	5.38	5.41	5.46	5.5	5.63

F. Increased demand for contraception

The number of married women in the reproductive age group (MWRA) will also increase over time, as the table below suggests (Table 5). These women will require contraceptives. UP will have to ensure access to a wide range of quality contraceptive products and services.

	Table 5: Projections of MWRA for India and UP under Scenario A and Scenario B (Numbers in millions)											
State	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
UP	36.4	37.3	38.2	39	39.8	40.6	41.3	42.1	42.8	43.5	44.2	45
India	237.7	242.2	246.6	250.8	254.8	258.6	262.1	265.5	268.6	271.5	274.3	277

G. Contraceptive use and its influence on infant and child mortality

IMR is a serious health concern and directly associated with fertility rate along with other socioeconomic factors. With lower contraceptive use, there are chances of higher IMR. It seems that UP will fall short of achieving its Millennium Development Goal (MDG) for IMR of 28 per 1,000 live births by 2015. The situation regarding Under-5 Mortality is similar. Table 6 projects the possible infant and under-five mortality rates that UP will have to plan for.

This indicates an urgent need to adopt strategies in a mission mode to control population growth, address unmet need, increase age of marriage and first birth, and engage multiple stakeholders in increasing access to quality family planning services.

Table 6: Projections for IMR and Under-five Mortality for Uttar Pradesh and India						
	IMR			<5 MORTALITY		
	2012	2017	2022	2012	2017	2022
Jharkhand	55.5	45.8	36.8	73.9	59	46.1
India	41.3	34.1	27.3	52.1	42	33.1

Greater investment in family planning is the need of the hour in Uttar Pradesh

Family planning saves lives by helping women prevent unintended pregnancies, delay early childbearing, and space births at least two years apart. In summary, meeting the unmet need for family planning reduces fertility rates, leading to improvements in women's and children's health. UP has a large unmet need for FP, an area requiring unprecedented focus in the state. Challenges of human resources, availability and access of contraceptives exist, and the state has to gear up to address these challenges on an immediate basis.

Photo: Satvir Malhotra © Futures Group

Thus, UP will need to ensure additional focus on:

- Increasing access to a wide range of quality contraceptive products and services.

- Placing increased importance on limiting methods and encouraging spacing between children among couples and giving prime importance to improved counselling so clients can make informed and voluntary choice.

- Encouraging increased participation of men in family planning.

- Improving human resources and health facilities to address the unmet need for family planning.

- Accelerating efforts towards addressing the socioeconomic factors that impact fertility. These include: increasing the age of marriage for girls and education levels among girls and women; and creating more employment opportunities for women.

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