District-Level Estimates of Fertility and Implied Sex Ratio at Birth in India

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With an emphasis on decentralised planning in India, the district has become the primary unit of planning and monitoring development programmes. The Census of India is the only source providing useful demographic information at the district and administrative levels below it. The findings of this study indicate that India is undergoing a fertility transition, yet around one-third of districts have a birth rate of 25 or more. High fertility districts have shown a faster pace of decline. Furthermore, around a quarter of the districts are characterised by a very low implied sex ratio at birth, of less than 900. Spatial analysis reveals a contiguous pattern of low ratios in the north-western part of the country and emerging pockets in Maharashtra and Gujarat followed by Orissa.

The views expressed in the paper are that of the authors and does not reflect those of the organisation with which they are affiliated.

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Appendix Table A1 is placed on the EPW website along with the text of this article.

The Census of India, conducted decennially, provides useful demographic information at the district level and administrative levels below it. The census information is in general eagerly awaited as there remains dire need of information for facilitating decentralised planning. Even though there are many other important sources such as the Civil Registration System (CRS), Sample Registration System (SRS) and periodic surveys (District-Level Household and Facility Survey and Annual Health Survey) providing demographic information, these sources have their own limitations in terms of coverage, quality as well as the level of disaggregation for which estimates are provided. For instance, CRS provides information on registered births and deaths, but suffers from coverage and content errors, resulting in gross underestimation of vital indicators. As a result, reliable estimates of important indicators like crude birth rate (CBR) and sex ratio at birth (SRB) are not available at the district level.

While detailed census information for computation of fertility and mortality indicators usually comes after a lag of two years or so after the completion of population enumeration phase, the Census of India, since 1991, has been providing quick provisional population estimates by sex, for the overall population, 0-6 year population and over seven years literate population, disaggregated up to the district level. Although the main purpose of providing the 0-6 population age group is to enable computation of the effective literacy rate, demographers have considered this a vital piece of information and have computed fertility indicators at the sub-national level by reversing the surviving population in this age group.

With a reverse survival technique, the number of births that have occurred during the seven-year period preceding the census can be estimated. The population count in the age category of 0-9 years has generally been found to be reasonably accurate (United Nations 1983). Furthermore, in the Indian context, the proportion of population counted in the 0-6 years age group has also been found to be fairly reliable (Bhat 1996). Bhat has shown the advantages of reverse-surviving using the 0-6 year age group for estimating the fertility rate, as against using the conventional 0-4 and 5-9 years age groups. He concluded that the age interval 0-6 years appeared to gain from digit preference for five and six years of completed age, offsetting the propensity of greater omission in the age interval 0-4 years, besides providing fertility estimates for a more recent period than the age interval of 0-9 years.

It is to be stated here that the inputs used for the calculation of birth rates can be potentially used in deriving the SRB. Until now, there has been no attempt to estimate district-level SRB and moreover, none of the large-scale surveys provides estimates at this level. Given the importance and recognition of gender imbalances in SRB in the country, a likely impact of prenatal sex-selection, it will be worthwhile to provide a blueprint of districts with low SRB that require immediate policy intervention and programmatic action. Furthermore, the issue of gender imbalance in SRB has taken centre stage in development debates in the country and has already drawn the attention of the political apparatus at the highest level.

1 Objectives

Fertility estimates at the district level have been derived when census provisional results are made available, especially after 1991 Census or when district-level surveys are conducted. Bhat (1996) was the first to attempt using census data, with an exercise covering two census periods – 1981 and 1991. Later Guilmoto and Rajan (2002) carried forward this exercise using 2001 Census provisional data. To maintain continuity with these past efforts, an attempt has been made to estimate the district fertility estimates (CBR) for 2011 using procedures followed earlier. In addition, the SRB has also been computed. The SRB is a more refined indicator than the child sex ratio (CSR) and is not influenced by differential infant and child mortality and age misreporting. The SRB was computed though the CSR available from the 2011 Census provisional results. The SRB in the present paper is termed "implied" because it has been estimated through indirect estimation techniques.

2 Methodology

The reverse survival technique of indirect estimation of fertility has been employed to estimate district-level CBR. Conventionally, this method allows estimating fertility measures in the five and 10 year periods prior to the census by using the total count of children aged 0-4 and 5-9 years at the time of the census. Theoretically, these children are the survivors of births that took place during the intercensal period. For example, children in these two age intervals found in 2011 Census are the survivors of those born between 2006-11 and 2001-06 respectively. For estimating fertility measures, the number of children is "reverse-survived", using appropriate survival ratios and taking the average of fertility estimates for these two time periods.

However, in case of provisional results from the census, only children in the age interval 0-6 years are known; these are the survivors of all births taken place during seven years preceding the census (2004-11). Therefore survival ratios pertaining to the period prior to Census 2011 have been computed on the basis of state-level life tables. The state-level life tables were prepared using the latest SRS-based age-specific mortality rates for the period 2004-08 with data from the Registrar General of India (RGI) (2006a, 2006b, 2007, 2008, 2009a). Further, the corresponding state-level estimates of survival ratios were then linked to district-level childhood mortality rates available from 2001 Census district data, based on children ever-born and surviving (United Nations 1983; RGI 2011a). Using the combination of state survival ratios and district childhood mortality, district-level survival ratios for children in the age interval of 0-6 years were obtained and the 0-6 years population were reverse-survived to get estimates of birth rate and implied SRB.

Assumptions*:* The reverse survival method assumes that reporting of age, especially of children, is accurate, and that the population is not affected by migration, and that fertility of migrants and non-migrants do not differ. Levels and age patterns of mortality during early childhood are known, or follow a model life table.

Data Requirements: Data sets used in estimating fertility measures are:
(1) District-wise child population in the age interval of 0-6 years for both sexes, from provisional Census 2011.
(2) State-level average age-specific death rates for the period 2004-08 obtained from SRS statistical reports.
(3) District-level indirect estimates of child mortality from 2001 data on children ever-born and children ever surviving.
(4) District-level total population from 2001 and 2011 Census data sets to estimate denominators for computing CBR.

Creation of New Districts and Redistricting: While the reverse survival method provides estimated number of births at the district level, total mid-year population for computing the CBR is required. Since the number of districts between 2001 and 2011 has increased from 593 to 640 districts respectively, population information related to the 47 newly carved out districts is hard to get. However, this information could be collated because of timely releases from the Administrative Atlas of India (2001-11) and CensusInfo (2011c) software. These provide useful information on jurisdictional changes at the district level, and adjusted 2001 population totals of the new as well as the erstwhile districts that have undergone jurisdictional changes (RGI 2011b).

Estimation Procedures: The steps and methods for computing state-level recent life tables (2004-08), obtaining survival ratio for the 0-6 population, estimating the number of births seven years preceding the 2011 Census, computing CBR and implied SRB are outlined below.

2.1 State-Level Estimations

Step 1: A life table for the period 2004-08 was prepared based on average age-specific mortality rates for 2004-08 using MORTPAK. Life table functions, viz, ${}_1L_0$, ${}_4L_1$, l_5 and l_{10} were used to compute survival ratios (${}_7L_0$) as explained in the next step. It is to be noted here that the SRS Statistical Report provides age-specific mortality rates only for bigger states. Recently SRS published the *Compendium of India's Fertility and Mortality Indicators, 1971-2007* (RGI 2009c), which is used to prepare life tables for the smaller states. Computation of life tables

require age-specific death rates separately for the 0-1 year and 1-4 years; however, the Compendium provides age-specific death rates only for the combined age group of 0-4 years. The bifurcation of age-specific rates for smaller states was done by applying the ratio of infant mortality rates to under-five mortality rates. The life table for smaller states pertains to the period 2004-07 as per the latest data availability.

Step II: The survival ratio (${}_7L_0$) for the age group 0-6 years was derived using the following formula:

$${}_7L_0 = {}_1L_0 + {}_4L_1 + 1.6\, l_5 + 0.4\, l_{10}$$

Step III: The average annual number of births during the seven years preceding Census 2011 was obtained by the following formula:

$$\text{Number of births during seven years} = \frac{\text{Population in 0-6 age group} \times 700000}{{}_7L_0}$$

Step IV: The mid-year population during 2004-11 was obtained by computing the exponential growth rate of the population during 2001-11 and estimating it at the mid-point of the period 2004-10; this serves as the denominator for computing the CBR.

Step V: The CBR per thousand population during the seven years preceding census 2011 was obtained by summing up male and female births and dividing by the mid-year population.

Step VI: The implied SRB was computed by dividing the number of female births by male births.

2.2 District-Level Estimates

Calculation of district-level estimates of fertility through the reverse survival technique requires reliable estimates of childhood mortality for computing survival ratios. An important source for the requisite information on child mortality at the district level is the census itself, as it provides data on ever-born and surviving children to all mothers; through these, indirect estimates of child mortality are obtained using the Brass Technique (United Nations 1983). Ideally, Census 2011 data has to be used but due to the time lag in the release of the required information, Census 2001 estimates of child mortality had to be used.

In using 2001 information, the assumption has been that the pace of decline in district child mortality is in sync with the state-level decline in child mortality. The assumption that all districts experienced the same quantum of decline in child mortality as the state may seem to be a strong one. Yet it has been shown that at moderate levels of mortality, birth rate estimates from the reverse survival procedure are not that sensitive to errors in child mortality estimates. In a typical Indian situation, an error of 10% in the estimate of child mortality results in a less than 2% error in the estimate of the CBR (Bhat 1996). Hence, district survival ratios have been computed accordingly.

Step VII: The ratio of district-level child mortality estimates (q5) to the state level (q5) based on the children ever born and children surviving data of the 2001 Census was computed as below:

$$\theta = \frac{1000 - \text{District q(5)}}{1000 - \text{State q(5)}}$$

Step VIII: The district-level survival ratio (${}_7L^D_0$) is computed by

$${}_7L^D_0 = 0.27 * (1-\theta) * 100000 + \theta * {}_7L^S_0$$

After the district-level survival ratios for both males and females are computed separately, the numbers of male and female births and the mid-year population of the district were obtained as described in Step III to Step V for a given district.

3 Key Findings and Discussions

The findings are presented first at the state level and triangulated with other sources of information for validating the results. These include estimation of the reverse survival estimates of the CBR and implied SRB. Subsequently, these indicators are presented for each district to enable sharper policy and programmatic focus (see Appendix Table A1, which has been placed on the EPW website).

3.1 Estimates of Reverse Survival CBR

Table 1 provides state-level estimates of CBR derived for the two periods 1994-2000 and 2004-10 using the reverse survival technique, compared with the CBR available from SRS. It can

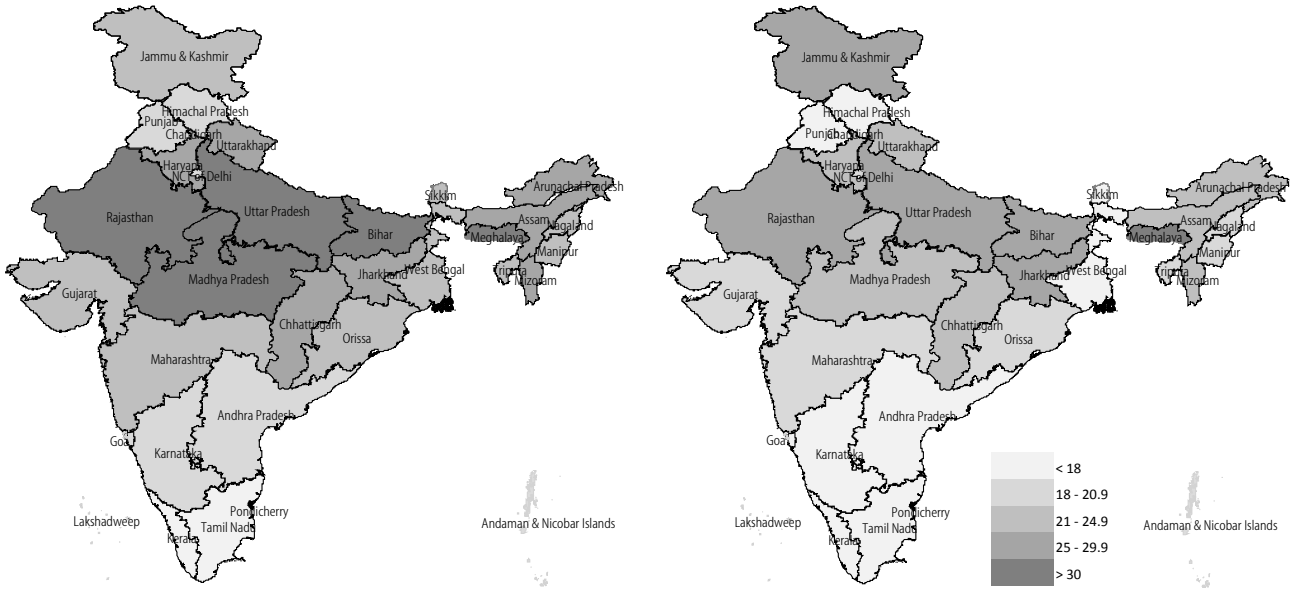
Table 1: Statewise Estimates of Crude Birth Rate Derived from 2011 Census and other Sources

	States	Reverse Survival Estimates of CBR, 1994-2000*	Reverse Survival Estimates of CBR, 2004-10	Percentage Decline in CBR (1994-2010)	Average CBR, SRS, 2004-10
	India	25.9	21.3	17.8	23.1
	Larger States				
1	Andhra Pradesh	20.4	16.1	21.1	18.6
2	Assam	27.0	23.8	11.9	24.2
3	Bihar	33.4	29.7	11.1	29.3
4	Chhattisgarh	28.6	23.3	18.5	26.4
5	Delhi	23.4	18.7	20.1	18.3
6	Gujarat	22.6	20.1	11.1	23.0
7	Haryana	25.9	21.3	17.8	23.5
8	Jammu & Kashmir	24.5	25.9	-5.7	18.7
9	Jharkhand	29.9	25.8	13.7	26.0
10	Karnataka	20.9	17.8	14.8	20.0
11	Kerala	17.1	14.7	14.0	14.8
12	Madhya Pradesh	30.7	24.4	20.6	28.5
13	Maharashtra	21.7	19.1	12.0	18.2
14	Odisha	23.6	19.6	16.9	21.6
15	Punjab	20.1	16.7	16.9	17.6
16	Rajasthan	32.1	25.6	20.2	27.9
17	Tamil Nadu	17.2	14.9	13.4	16.3
18	Uttar Pradesh	31.4	25.0	20.4	29.6
19	West Bengal	22.5	17.3	23.1	18.0
	Smaller States				
1	Arunachal Pradesh	29.9	23.1	22.7	21.8
2	Goa	15.9	14.1	11.3	14.1
3	Himachal Pradesh	20.5	17.7	13.7	18.2
4	Manipur	21	19.8	5.7	14.7
5	Meghalaya	33.6	30.1	10.4	24.8
6	Mizoram	27.3	23.5	13.9	18.1
7	Nagaland	24.1	20.8	13.7	16.6
8	Sikkim	23.7	15.1	36.3	18.7
9	Tripura	21.2	18.4	13.2	15.7
10	Uttarakhand	26.1	21.3	18.4	20.3
	Correlation coefficient between reverse Survival CBR and SRS CBR		0.772*		

* Significant at the 0.01 level

Source: Author's computations.

Map 1: Reversed Survival Estimates of CBR (1994-2000 and 2004-10)



be observed that the CBR, which was 25.9 during the period 1994-2000, had declined to 21.3 births per 1,000 population between 2004 and 2010 resulting in a one-fifth decline during the reference period. Most of the states in the country, barring Jammu & Kashmir, witnessed declines in the birth rate but the extent of decline varied across the states. The maximum decline among the larger states was seen in West Bengal and Andhra Pradesh, while among the smaller states, Sikkim and Arunachal Pradesh showed substantial decline. Among the states with high fertility, Rajasthan, Madhya Pradesh and Uttar Pradesh showed indications of a faster pace of decline whereas the pace of decline in Bihar was slow. Meghalaya was the only state in the country with a birth rate of over 30 and negligible decadal change.

Map 1 depicts a clear pattern of decline in birth rate in the country. States with birth rates lower than 18 have exhibited a clustered type of decline, with all the southern states including Goa forming one cluster, and West Bengal and Sikkim in the east and Punjab and Himachal Pradesh in the north the second. Interestingly, all the high fertility states in the central region too indicate a contiguous pattern of decline. Further, comparisons of birth rates obtained from reverse survival with SRS estimates reveals that SRS birth rates were higher than reverse survival estimates for the larger states while it was the other way round in case of most of the north-eastern states. One plausible explanation is that the variations in sample-based SRS could partly be due to the standard error or the small sample allocation in smaller states. Nonetheless, the correlation between reverse survival and SRS estimates comes out to be 0.772 (significant at the 0.01 level).

3.2 Estimates of Implied SRB

Since the number of births is computed by sex, this procedure allows us to compute the implied sex ratio for the reference period. Such an analysis has been carried out and presented in Table 2. It is to be mentioned here that the Indian definition

Table 2: Statewise Child Sex Ratio (0-6 Age Population), Implied Sex Ratio at Birth and Sex Ratio at Birth from SRS

	State	CSR (0-6 age Group), 2011	Implied SRB (Females to Males)	Difference (Implied SRB-CSR)	SRS SRB, 2007-09
	India	914	919	5	906
	Larger States				
1	Andhra Pradesh	943	942	-1	919
2	Assam	957	952	-5	931
3	Bihar	933	941	8	917
4	Chhattisgarh	964	963	-1	980
5	Delhi	866	864	-2	882
6	Gujarat	886	891	5	904
7	Haryana	830	842	12	849
8	Jammu & Kashmir	859	870	11	870
9	Jharkhand	943	953	10	921
10	Karnataka	943	944	1	944
11	Kerala	943	959	16	968
12	Madhya Pradesh	912	917	5	926
13	Maharashtra	883	902	19	896
14	Odisha	934	936	2	941
15	Punjab	846	854	8	836
16	Rajasthan	883	889	6	875
17	Tamil Nadu	946	946	0	929
18	Uttar Pradesh	899	911	12	874
19	West Bengal	950	947	-3	944
	Smaller States				
1	Arunachal Pradesh	960	961	1	--
2	Goa	920	920	0	
3	Himachal Pradesh	906	916	10	944
4	Manipur	934	934	0	--
5	Meghalaya	970	967	-3	--
6	Mizoram	971	972	1	--
7	Nagaland	944	945	1	--
8	Sikkim	944	947	3	--
9	Tripura	953	954	1	--
10	Uttarakhand	886	890	4	--
	Correlation Coefficient between CSR and SRB		0.987*		

*Significant at the 0.01 level.
Source: Author's computations.

of implied SRB, that is ratio of female to male births has been used, while internationally, the definition is ratio of males to female births.

For India as a whole, the implied SRB is estimated to be 919 females per 1,000 males, which is higher than the three-year average SRS SRB estimate (906) for the period 2007-09. It is to be reiterated that the estimates of SRB from the SRS are based on a sample and subject to a large confidence interval. The upper limit of the SRS SRB is estimated to be 911 while the lower limit is 901.[1]

Likewise variation existed at the state level; 13 out of 29 states had a higher implied SRB than the SRS SRB. The extent of variation in the confidence interval was enormous and ranged from 33 points (between lower and upper limits of SRB) in Bihar, to 58 points in Punjab. But on an average, the confidence interval ranged between 45 and 57 points in the majority of states.

With respect to statewide variations of the implied SRB, the highest SRB is recorded in states of Mizoram (972), Meghalaya (967), Chhattisgarh (963), Kerala (959), Tripura (954), Jharkhand (953) and Assam (952) in comparison to other states. If the range of 952-943 SRB (or 105-106 as per the international definition) is applied, then 13 out of 29 states fall within this range. It is lower in other states: in Delhi, Gujarat, Haryana, Jammu & Kashmir, Rajasthan, Punjab and Uttarakhand, concentrated in the north-western part of the country, it is less than 900 (Map 2).

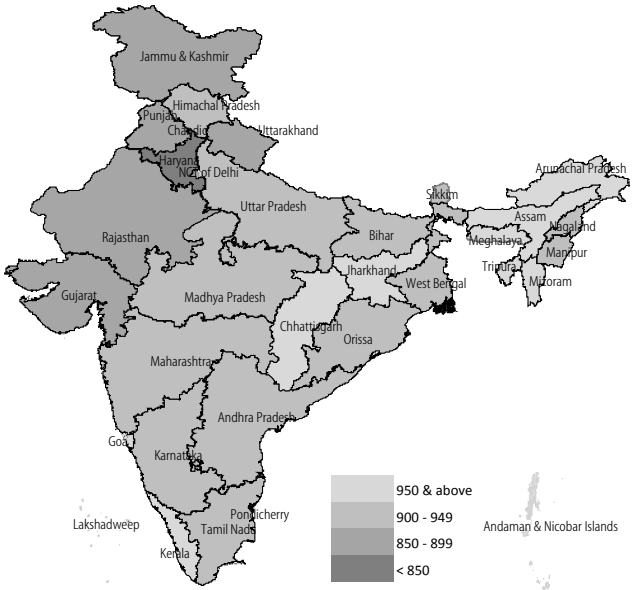
Comparison of implied SRB with CSR gives an idea about whether the influence of prenatal sex-selection is greater or whether it is due to excessive female mortality in the 0-6 age group. If the implied SRB>CSR, then the influence of excessive female child mortality is higher, and if the implied SRB<CSR, then the influence of prenatal sex-selection is strong. From Table 2, it is observed that implied SRB is markedly higher than CSR in most states in the country, barring the three states of Assam, Delhi and West Bengal and one smaller state, Meghalaya. For Andhra Pradesh and Chhattisgarh, the implied SRB is just one point higher than CSR. It can therefore be inferred that discrimination against girls at birth exists in certain parts of the country but the neglect of girls after birth is higher and more pronounced across the country. Furthermore, the correlation of implied SRB with the CSR indicated a value of 0.987 and was highly significant, suggesting a close relationship between implied SBR and CSR.

3.3 District-Level Estimates of CBR and Implied SRB

The district-level estimates of CBR and their trend analysis are based on the Guilmoto and Rajan (2002) estimates. In addition, CSR and implied SRB for 628 out of the 640 districts in India from 2011 Census have been carried out and presented in the Appendix Table A1.

While the CBR at the national level is 21.3 births per 1,000 population, the district-level estimates present a wide variation across the country, ranging from a minimum of 9.8 in Kolkata district in West Bengal to a maximum of 38.8 in Mewat district in Haryana. Further, 299 out of the 628 districts considered have a CBR lower than the national level. As

Map 2: Implied Sex Ratio at Birth (2004-10)

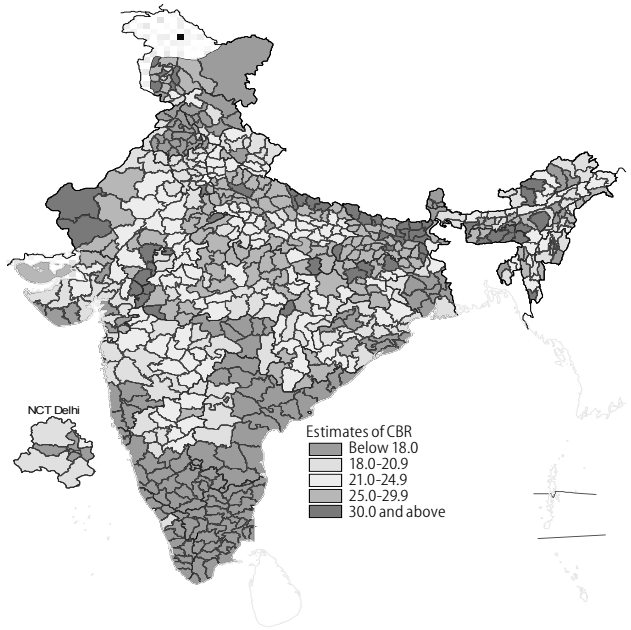


regards classification of districts by CBR, there are 172 districts with CBR lower than 18, 121 districts between 18 and 21; 140 districts between 21 and 25, and 195 districts having CBR more than 25. In this category, there are as many as 53 high fertility districts with CBR more than 30. Of these 53 high fertility districts, the maximum numbers came from Bihar (16), Rajasthan (6), Uttar Pradesh, Jammu & Kashmir, Jharkhand (five each) and Meghalaya and Madhya Pradesh (four each).

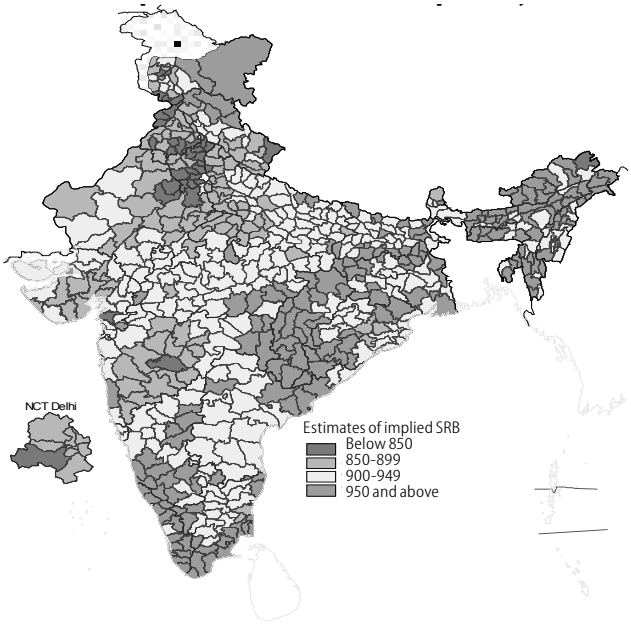
The comparison of trends between 1994 and 2010 was possible because of a similar analysis conducted by Guilmoto and Rajan (2002). However, it is to be stated here that 47 new districts were formed between 2001 and 2011. The birth rate estimated for the district with a new administrative population in 2011 may not depict a one-to-one comparison with the undivided previous estimate of 2001 and has to be analysed with caution. This can be considered a limitation. Nonetheless, the analysis of trends depicts a decline of 18% in the birth rate; the variation in decline ranged from a minimum of less than 1% in East Kameng district in Arunachal Pradesh to a maximum of about 45% in Neemuch district of Madhya Pradesh (Table A1). Nearly 274 districts experienced a faster pace of decline than the national aggregate; there were 63 districts that had experienced a decline of over 25% in their birth rates. One interesting finding observed from Map 3 is the contiguous nature of the level of fertility that exists across southern India, and the clusters around Himachal Pradesh and Punjab. On the other hand, in the high fertility states of Bihar, Uttar Pradesh and Rajasthan, districts exhibit contiguity in the level of fertility, varying between moderate and high levels interspersed by districts with CBR over 30.

On the whole, districts in states that had already achieved lower birth rates witnessed a slower pace of decline. Though high fertility districts exhibited a higher pace of decline, there is a continuing need to focus on these moderate or high fertility districts programmatically by addressing unmet demand for reproductive health services. Furthermore, when one examines

Map 3: District-Level Estimates of CBR (2004-10)



Map 4: District-Level Estimates of Implied SRB (2004-10)



the results of undivided districts in Jammu & Kashmir, a clear increase in birth rate is observed. It is difficult to conclusively comment on data quality, yet the impression one gets is that the data is suspect and needs further investigation.

The analysis of district-level estimates of the implied SRB indicates substantial variation across the country with the lowest of 783 to the highest of 1,060, with the national average being 919 girls per 1,000 boys (Table A1 in the Appendix). About a quarter of the districts in India (161) are characterised by very low implied SRB (lower than 900), with four districts – Jhajjar (783), Mahendragarh (789), Rewari (788) in Haryana and Samba (794) in Jammu & Kashmir – at less than 800. Further, there are 30 districts in the range of 800-849, mainly consisting of districts from Haryana (9), Punjab (8), Jammu & Kashmir (4) and Rajasthan (2). The next category included 127 districts with implied SRBs of 850-899. Districts in the states of Uttar Pradesh (21), Rajasthan (19), Maharashtra (16), Punjab (10) and Gujarat (10) accounted for more than half the districts in this category. Bordering states such as Haryana, Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Madhya Pradesh also exhibited adverse ratios. Spatial analysis reveals a contiguous pattern in the north-western part of the country and emerging pockets in Maharashtra and Gujarat followed by Orissa. On the other hand, there are 279 and 188 districts in the 900-949 and 950 and above categories respectively. Evidently, a sizeable number of districts in India experience a low SRB, as seen from this analysis of the implied SRB estimated from the provisional figures of the child population from Census 2011.

However, if one were to juxtapose and draw inferences from the declining CSR trends, one can say with conviction that the problem of declining SRB and CSR that had remained an urban phenomenon has now percolated to rural and tribal districts with state-border districts being the most affected, depicting contiguity in spatial distribution. In addition to this observation, it appears that a centrifugal force within the state is operating wherein districts bordering the lowest implied SRB also have lower implied SRB. This pattern appears to be spreading out (Map 4). This observation is typical in the states of Maharashtra, Punjab and Haryana. Trend analyses would have depicted this better but previous work on indirect fertility estimation from census data by Bhat and Guilmoto et al have not dealt with this important aspect. Therefore, it is difficult to analyse trends and the patterns of change. This can be considered a limitation of the present paper.

4 Way Forward

Analysis of provisional census data has clearly indicated that district fertility in the country has come down substantially in the past one decade. At the same time, it has also brought out the extent of variation across districts within and between states in the country. Further, it has facilitated the classification of districts by their present level of fertility and the decadal pace of decline. Likewise, implied SRB and its comparison with CSR has enabled an overall picture of prenatal sex-selection and post-birth discrimination in districts of the country.

Programmatically, information related to vital rates, age-specific fertility and mortality rates, and SRB are needed continuously not only for prioritising action and evolving area-specific plans but also for tracking progress in these indicators. Despite the implementation of decentralisation in the country for nearly three decades, it is hard to get direct

estimates at the district level in the country. One has to rely on decennial information from the census and special sample surveys for information, that too employing indirect techniques of estimation. Indirect estimation involves making a set of assumptions; there is therefore a need to improve administrative data systems so that quality data is available on a regular and continuous basis.

For this to happen, the focus has to be on improving CRS in the country. Presently, about 12 states and four union territories have been reporting over 90% registration of births in 2005 (RGI 2009b). Efforts to estimate vital rates and SRB at the district level will have to be initiated in these states and validated through SRS and other surveys at the state level. At the same time, concrete efforts are needed to strengthen CRS in states where the reporting is poor. With National Population Register updation on the anvil, it becomes imperative and necessary to set right the basic data systems at disaggregated levels.

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Appendix Table A1: Estimates of Crude Birth Rate and Implied Sex Ratio at Birth for Districts, Census 2011

		CBR 1994-2000	CBR 2004-10	% Decline over 1994-2000 to 2004-10	CSR, 2011	Implied SRB
	India	25.9	21.3	17.9	914	919
	Andhra Pradesh	20.4	16.1	21.0	943	942
1	Adilabad	23.5	17.1	27.4	942	935
2	Nizamabad	21.9	16.3	25.5	946	945
3	Karimnagar	19.9	13.0	34.7	937	935
4	Medak	23.3	18.2	22.0	954	952
5	Hyderabad	18.6	15.9	14.3	938	947
6	Rangareddy	22.5	19.4	13.8	947	949
7	Mahbubnagar	24.8	20.4	17.9	932	932
8	Nalgonda	21.7	16.0	26.5	921	920
9	Warangal	21.7	14.3	34.0	912	911
10	Khammam	21.0	15.0	28.7	958	957
11	Srikakulam	20.6	15.6	24.4	953	947
12	Vizianagaram	20.7	15.9	23.0	955	945
13	Visakhapatnam	19.6	16.0	18.3	961	960
14	East Godavari	18.6	14.7	21.1	969	965
15	West Godavari	18.0	14.1	21.7	970	964
16	Krishna	18.0	13.9	22.9	953	949
17	Guntur	17.7	14.8	16.4	948	946
18	Prakasam	19.2	16.7	13.3	932	933
19	Sri Potti Sriramulu Nellore	18.5	15.2	17.9	945	940
20	YSR	19.8	17.1	13.8	919	916
21	Kurnool	24.5	19.1	22.2	937	941
22	Anantapur	20.6	16.9	18.1	927	930
23	Chittoor	19.6	16.0	18.4	931	928
	Assam	27.0	23.8	11.8	957	952
1	Kokrajhar≠	29.3	23.6	19.4	951	951
2	Dhubri	35.2	32.2	8.5	965	956
3	Goalpara	32.0	28.0	12.6	954	945
4	Barpeta≠	30.8	27.9	9.5	955	950
5	Morigaon	31.8	28.1	11.6	950	944
6	Nagaon	29.9	26.5	11.2	958	955
7	Sonitpur≠	25.6	22.8	11.0	958	952
8	Lakhimpur	27.4	23.6	13.9	958	954
9	Dhemaji	27.7	23.7	14.5	945	942
10	Tinsukia	25.1	21.0	16.4	971	969
11	Dibrugarh	22.0	18.1	17.7	957	963
12	Sivasagar	21.6	18.5	14.6	957	951
13	Jorhat	19.4	16.8	13.2	963	963
14	Golaghat	23.3	19.2	17.5	961	958
15	Karbi Anglong	29.6	31.8	-7.6	916	916
16	Dima Hasao	27.7	24.0	13.5	956	956
17	Cachar	25.3	23.8	6.1	955	948
18	Karimganj	29.0	28.3	2.3	958	952
19	Hailakandi	30.2	27.9	7.5	948	946
20	Bongaigaon≠	29.4	26.0	11.4	965	958
21	Chirang*	NA	23.7	xx	958	954
22	Kamrup≠	22.1	20.7	6.5	962	960
23	Kamrup Metropolitan*	NA	15.5	xx	994	992
24	Nalbari≠	23.0	18.9	18.0	963	961
25	Baksa*	NA	19.8	xx	962	960
26	Darrang≠	29.1	28.1	3.3	941	934
27	Udalguri*	NA	21.5	xx	965	958
	Bihar	33.4	29.7	11.2	933	941
1	Paschim Champaran	35.7	32.0	10.3	950	956
2	Purba Champaran	34.8	33.0	5.3	923	935
3	Sheohar	35.8	32.7	8.7	925	950
4	Sitamarhi	36.3	32.1	11.6	932	956
5	Madhubani	33.3	28.6	14.1	931	943
6	Supaul	36.2	31.6	12.6	942	950
7	Araria	36.2	34.9	3.7	954	948
8	Kishanganj	39.0	35.3	9.6	966	963
9	Purnia	37.6	33.3	11.4	953	956
10	Katihar	38.2	33.4	12.7	956	962
11	Madhepura	36.7	33.3	9.3	923	928
12	Saharsa	35.5	32.6	8.2	928	938
13	Darbhanga	33.1	29.4	11.3	928	946
14	Muzaffarpur	32.7	29.2	10.7	917	928
15	Gopalganj	31.9	27.4	14.0	945	946
16	Siwan	32.9	25.8	21.6	934	928
17	Saran	32.6	26.8	17.8	922	924
18	Vaishali	31.9	28.2	11.7	894	904
19	Samastipur	34.8	30.6	12.2	941	954
20	Begusarai	34.0	29.9	12.1	911	924
21	Khagaria	35.7	34.9	2.3	912	925
22	Bhagalpur	31.9	28.9	9.6	934	939
23	Banka	33.8	29.5	12.9	939	950
24	Munger	29.0	26.0	10.4	925	933
25	Lakhisarai	33.8	30.2	10.6	915	927
26	Sekhpura	34.3	30.6	10.7	940	954
27	Nalanda	31.2	28.6	8.4	929	938
28	Patna	28.4	25.4	10.6	899	909
29	Bhojpur	30.1	26.3	12.7	915	926
30	Buxar	31.7	27.4	13.7	925	937
31	Kaimur	34.4	30.6	11.1	939	952
32	Rohtas	32.1	26.8	16.4	925	932
33	Jehanabad	32.0	28.4	11.3	918	928
34	Aurangabad	32.3	29.4	9.0	945	952
35	Gaya	33.2	29.0	12.7	959	962
36	Nawada	33.3	26.9	19.3	985	994
37	Jamui	32.8	29.6	9.7	956	965
38	Arwal*	NA	28.9	xx	941	951
	Chhattisgarh	28.6	23.3	18.6	964	963
1	Koriya	27.4	22.8	16.6	968	970
2	Surguja	31.5	25.7	18.6	955	957
3	Jashpur	27.0	23.2	14.1	974	979
4	Raigarh	26.3	20.8	20.9	943	945
5	Korba	28.0	23.0	18.0	964	965
6	Janjgir-Champa	28.0	22.1	21.2	945	945
7	Bilaspur	28.3	25.9	8.5	957	956
8	Kabeerdham	NA	30.7	xx	973	967
9	Rajnandgaon	28.1	22.6	19.6	976	971
10	Durg	25.1	20.3	19.1	958	956
11	Raipur	28.4	24.0	15.3	965	963
12	Mahasamund	25.4	20.8	18.1	960	963
13	Dhamtari	27.5	20.2	26.6	969	971
14	Uttar Bastar Kanker	27.0	21.1	21.9	975	971
15	Bastar≠	29.3	24.8	15.2	991	988
16	Narayanpur*	NA	27.0	xx	975	973
17	Dakshin Bastar Dantewada≠	30.2	23.9	20.7	1,005	1,013
18	Bijapur*	NA	25.9	xx	978	986

(Continued)

Appendix Table A1: Estimates of Crude Birth Rate and Implied Sex Ratio at Birth for Districts, Census 2011 *(Continued)*

		CBR 1994-2000	CBR 2004-10	% Decline over 1994-2000 to 2004-10	CSR, 2011	Implied SRB
	NCT of Delhi	23.4	18.7	19.9	866	864
1	North West	25.2	19.7	21.9	863	860
2	North	18.8	17.6	6.4	872	865
3	North East	28.1	21.5	23.4	875	874
4	East	22.6	17.5	22.7	870	868
5	New Delhi	17.1	11.5	32.7	884	874
6	Central	17.2	14.9	13.6	902	896
7	West	21.3	17.7	17.1	867	864
8	South West	24.0	18.7	22.2	836	833
9	South	24.2	18.9	22.1	878	874
	Gujarat	22.6	20.1	10.8	886	891
1	Kachchh	NA	25.1	xx	913	919
2	Banaskantha	31.3	26.7	14.7	890	900
3	Patan	26.1	22.2	15.1	884	900
4	Mahesana	22.4	17.7	20.8	845	854
5	Sabarkantha	25.1	22.5	10.2	899	901
6	Gandhinagar	22.1	18.5	16.1	847	862
7	Ahmedabad	20.5	18.2	11.3	859	865
8	Surendranagar	27.6	21.6	21.8	889	898
9	Rajkot	16.9	18.0	-6.3	854	857
10	Jamnagar	21.7	18.6	14.3	898	903
11	Porbandar	21.8	16.8	23.0	894	895
12	Junagadh	23.1	17.3	24.9	904	903
13	Amreli	21.1	17.3	18.1	879	884
14	Bhavnagar	25.3	20.3	19.6	885	889
15	Anand	21.7	18.8	13.2	877	884
16	Kheda	23.1	19.6	15.3	887	896
17	Panchmahals	27.7	23.9	13.8	923	924
18	Dohad	34.2	32.6	4.7	937	943
19	Vadodara	21.3	18.2	14.5	894	901
20	Narmada	24.6	20.6	16.3	937	936
21	Bharuch	22.3	17.5	21.7	914	918
22	The Dangs	32.8	28.4	13.3	963	968
23	Navsari	17.9	15.0	16.0	921	916
24	Valsad	22.7	19.4	14.4	926	924
25	Surat≠	23.2	19.8	14.8	836	838
26	Tapi*	NA	16.3	xx	944	946
	Haryana	25.9	21.3	18.0	830	842
1	Panchkula	24.1	18.8	22.2	850	865
2	Ambala	20.9	17.1	18.3	807	821
3	Yamunanagar	22.7	19.0	16.1	825	837
4	Kurukshetra	23.0	19.3	16.0	817	817
5	Kaithal	25.1	20.6	18.1	821	838
6	Karnal	24.0	21.0	12.4	820	836
7	Panipat	27.5	22.6	17.7	833	844
8	Sonipat	24.4	20.4	16.3	790	800
9	Jind	26.0	20.0	23.2	835	850
10	Fatehabad	26.3	20.7	21.3	845	855
11	Sirsa	24.7	19.1	22.8	852	862
12	Hisar	25.3	19.3	23.6	849	863
13	Bhiwani	25.5	20.3	20.5	831	839
14	Rohtak	23.5	18.8	20.0	807	819
15	Jhajjar	24.3	19.1	21.6	774	783
16	Mahendragarh	25.5	19.1	25.0	778	789
17	Rewari	25.0	20.2	19.2	784	788
18	Gurgaon≠	35.2	24.5	30.3	826	842
19	Mewat*	NA	38.8	xx	903	921
20	Faridabad≠	29.9	22.2	25.7	842	861
21	Palwal*	NA	27.3	xx	862	881
	Jammu & Kashmir	24.5	25.9	-5.6	859	870
1	Kupwara	30.4	38.1	-25.2	854	862
2	Budgam	25.8	33.1	-28.1	832	843
3	Leh(Ladakh)	10.6	13.4	-26.2	944	958
4	Kargil	26.7	25.6	4.2	978	965
5	Punch	30.3	29.3	3.3	895	900
6	Rajouri	28.0	31.2	-11.5	837	850
7	Kathua≠	24.9	20.6	17.2	836	844
8	Baramulla≠	26.4	25.9	2.0	866	882
9	Bandipore*	NA	25.9	xx	893	909
10	Srinagar≠	17.5	19.7	-12.8	869	888
11	Ganderbal*	NA	28.3	xx	863	883
12	Pulwama≠	20.8	27.5	-32.4	836	846
13	Shupiyan*	NA	24.1	xx	883	893
14	Anantnag≠	25.0	32.4	-29.6	831	853
15	Kulgam*	NA	25.7	xx	882	905
16	Doda≠	29.1	28.3	2.7	932	942
17	Ramban*	NA	31.9	xx	931	939
18	Kishtwar*	NA	27.1	xx	922	931
19	Udhampur≠	27.7	23.9	13.7	887	893
20	Reasi*	NA	29.0	xx	921	928
21	Jammu≠	21.3	16.1	24.3	795	803
22	Samba*	NA	18.7	xx	787	794
	Jharkhand	29.9	25.8	13.7	943	953
1	Garhwa	37.7	29.9	20.6	958	974
2	Chatra	34.1	30.5	10.4	963	981
3	Kodarma	33.1	29.6	10.4	944	950
4	Giridih	35.8	30.2	15.7	934	945
5	Deoghar	33.2	28.7	13.5	939	958
6	Godda	31.5	29.5	6.3	953	974
7	Sahibganj	35.5	31.1	12.3	955	972
8	Pakur	35.0	32.6	6.9	965	976
9	Dhanbad	24.4	21.0	13.9	917	923
10	Bokaro	25.8	21.4	17.2	912	923
11	Lohardaga	32.9	27.3	17.0	961	969
12	Purbi Singhbhum	22.1	19.6	11.2	922	923
13	Palamu≠	34.7	27.5	20.6	947	965
14	Latehar*	NA	31.1	xx	964	982
15	Hazaribagh≠	30.0	25.7	14.4	924	929
16	Ramgarh*	NA	21.6	xx	926	931
17	Dumka≠	28.6	25.7	10.1	957	969
18	Jamtara*	NA	26.0	xx	948	960
19	Ranchi≠	26.4	21.5	18.5	937	942
20	Khunti*	NA	25.2	xx	951	956
21	Gumla≠	30.7	27.7	9.7	955	949
22	Simdega*	NA	25.2	xx	975	969
23	Pashchimi Singhbhum≠	28.3	27.9	1.2	980	987
24	Saraikela-Kharsawan*	NA	24.1	xx	937	944

(Continued)

Appendix Table A1: Estimates of Crude Birth Rate and Implied Sex Ratio at Birth for Districts, Census 2011 *(Continued)*

		CBR 1994-2000	CBR 2004-10	% Decline over 1994-2000 to 2004-10	CSR, 2011	Implied SRB
	Karnataka	20.9	17.8	14.7	943	944
1	Belgaum	22.8	20.0	12.5	931	930
2	Bagalkot	25.1	22.4	10.7	929	928
3	Bijapur	24.4	22.6	7.2	930	935
4	Bidar	25.1	19.9	20.9	935	939
5	Raichur	26.5	22.7	14.4	949	953
6	Koppal	27.4	23.0	16.2	953	960
7	Gadag	22.0	18.9	13.9	944	943
8	Dharwad	21.1	18.0	14.8	942	944
9	Uttara Kannada	19.7	15.5	21.3	947	948
10	Haveri	21.8	18.6	14.8	945	945
11	Bellary	25.1	22.9	8.8	954	958
12	Chitradurga	20.4	17.0	16.7	933	933
13	Davanagere	20.7	16.7	19.5	931	928
14	Shimoga	19.5	15.3	21.4	960	967
15	Udupi	15.0	12.7	15.1	955	959
16	Chikmagalur	18.3	13.3	27.4	963	965
17	Tumkur	18.3	14.6	20.5	952	950
18	Bangalore	18.7	17.3	7.5	941	942
19	Mandya	16.9	13.7	19.2	934	932
20	Hassan	17.6	13.2	25.1	964	963
21	Dakshina Kannada	17.6	14.8	15.8	946	950
22	Kodagu	19.2	14.0	27.0	977	974
23	Mysore	18.9	15.1	20.2	956	950
24	Chamarajanagar	17.9	14.4	19.6	942	941
25	Gulbarga≠	26.7	22.2	16.7	935	945
26	Yadgir*	NA	26.0	xx	942	952
27	Kolar≠	20.5	16.4	19.8	955	954
28	Chikkaballapura*	NA	15.5	xx	945	944
29	Bangalore Rural≠	17.9	16.3	8.9	947	946
30	Ramanagara*	NA	14.3	xx	960	959
	Kerala	17.1	14.7	14.3	959	959
1	Kasaragod	18.9	17.0	10.1	960	961
2	Kannur	16.6	15.4	7.4	962	963
3	Wayanad	19.5	16.3	16.5	960	960
4	Kozhikode	17.4	15.5	11.2	963	963
5	Malappuram	22.4	20.2	9.7	960	958
6	Palakkad	17.3	15.3	11.5	962	961
7	Thrissur	16.1	13.6	15.4	948	949
8	Ernakulam	15.7	13.1	16.8	954	957
9	Idukki	17.0	13.1	23.0	958	954
10	Kottayam	15.6	12.4	20.8	957	960
11	Alappuzha	15.2	12.8	15.7	947	951
12	Pathanamthitta	14.5	11.0	24.1	964	971
13	Kollam	16.2	13.3	18.1	960	965
14	Thiruvananthapuram	16.4	12.9	21.5	967	974
	Madhya Pradesh	30.7	24.4	20.6	912	917
1	Sheopur	34.5	28.8	16.6	888	899
2	Morena	31.6	25.7	18.7	825	862
3	Bhind	29.5	23.0	22.1	835	867
4	Gwalior	25.6	20.4	20.3	832	851
5	Datia	29.8	23.5	21.0	852	876
6	Shivpuri	36.1	28.2	22.0	889	909
7	Tikamgarh	33.8	26.3	22.2	886	907
8	Chhatarpur	36.0	27.0	25.0	894	905
9	Panna	35.7	27.6	22.6	910	903
10	Sagar	31.9	24.9	22.1	925	932
11	Damoh	31.4	25.2	19.6	931	935
12	Satna	33.6	25.0	25.7	907	911
13	Rewa	34.0	24.3	28.6	883	891
14	Umaria	32.6	27.1	16.9	946	942
15	Neemuch	37.1	20.5	44.9	918	912
16	Mandsaur	28.4	20.9	26.3	921	921
17	Ratlam	30.6	24.6	19.6	931	924
18	Ujjain	28.0	21.7	22.6	919	916
19	Shajapur	31.5	23.0	27.0	913	916
20	Dewas	30.1	24.0	20.3	907	911
21	Dhar	33.0	26.7	19.2	913	909
22	Indore	24.7	20.2	18.4	892	889
23	West Nimar	33.3	26.0	21.9	931	924
24	Barwani	39.6	32.6	17.8	940	941
25	Rajgarh	32.8	24.8	24.3	916	918
26	Vidisha	34.0	27.5	19.3	922	928
27	Bhopal	26.6	20.3	23.6	916	913
28	Sehore	34.3	25.0	27.0	906	916
29	Raisen	33.5	25.3	24.5	927	928
30	Betul	29.6	21.5	27.4	949	944
31	Harda	31.6	24.9	21.2	921	929
32	Hoshangabad	27.9	21.9	21.5	911	917
33	Katni	30.4	26.1	14.1	934	927
34	Jabalpur	24.2	19.0	21.7	916	915
35	Narsimhapur	27.4	20.7	24.3	900	906
36	Dindori	27.2	25.8	5.3	970	973
37	Mandla	28.8	23.3	19.0	965	972
38	Chhindwara	27.3	20.7	24.2	950	958
39	Seoni	27.8	20.9	24.7	954	950
40	Balaghat	25.2	19.9	21.0	961	949
41	Guna≠	35.2	28.6	18.7	901	914
42	Ashoknagar*	NA	28.2	xx	914	927
43	Shahdol≠	29.3	24.4	16.8	946	939
44	Anuppur*	NA	22.8	xx	943	935
45	Sidhi≠	36.5	29.3	19.9	910	908
46	Singrauli*	NA	30.6	xx	921	919
47	Jhabua≠	41.6	35.6	14.5	934	924
48	Alirajpur*	NA	33.6	xx	971	960
49	East Nimar≠	30.4	26.1	14.0	931	932
50	Burhanpur*	NA	26.6	xx	921	921
	Maharashtra	21.7	19.1	12.0	883	902
1	Nandurbar	27.0	24.7	8.6	932	948
2	Dhule	22.5	21.9	2.9	876	901
3	Jalgaon	21.7	20.3	6.4	829	854
4	Buldana	23.5	21.0	10.8	842	860
5	Akola	22.3	18.6	16.7	900	918
6	Washim	24.3	20.8	14.3	859	878
7	Amravati	21.2	17.5	17.7	927	944
8	Wardha	19.2	15.6	18.8	916	934
9	Nagpur	20.2	17.4	13.8	926	944
10	Bhandara	20.7	17.1	17.2	939	952
11	Gondia	21.8	17.6	19.1	944	954
12	Gadchiroli	25.8	18.5	28.4	956	966

(Continued)

Appendix Table A1: Estimates of Crude Birth Rate and Implied Sex Ratio at Birth for Districts, Census 2011 *(Continued)*

		CBR 1994-2000	CBR 2004-10	% Decline over 1994-2000 to 2004-10	CSR, 2011	Implied SRB
13	Chandrapur	20.9	17.1	18.3	945	956
14	Yavatmal	23.7	19.5	17.5	915	933
15	Nanded	25.5	22.5	11.7	897	917
16	Hingoli	26.1	23.3	10.7	868	887
17	Parbhani	25.2	23.3	7.7	866	887
18	Jalna	24.6	24.7	-0.5	847	870
19	Aurangabad	24.1	24.2	-0.6	848	871
20	Nashik	25.0	22.5	9.9	882	903
21	Thane	23.4	19.8	15.4	918	937
22	Mumbai Suburban	18.2	15.1	16.8	910	928
23	Mumbai	14.6	12.8	12.0	874	895
24	Raigad	21.8	18.4	15.4	924	940
25	Pune	20.6	19.2	6.7	873	891
26	Ahmadnagar	21.8	19.4	10.9	839	857
27	Beed	23.5	22.3	5.2	801	823
28	Latur	24.1	21.1	12.4	872	896
29	Osmanabad	23.2	19.8	14.7	853	873
30	Solapur	22.2	19.7	11.1	872	892
31	Satara	19.2	16.3	15.1	881	896
32	Ratnagiri	20.5	14.2	30.8	940	958
33	Sindhudurg	17.4	12.5	28.1	910	929
34	Kolhapur	19.3	16.5	14.7	845	862
35	Sangli	19.4	16.8	13.6	862	877
	Orissa	23.6	19.6	17.0	934	936
1	Bargarh	20.6	16.6	19.3	946	939
2	Jharsuguda	21.1	16.7	20.8	938	937
3	Sambalpur	21.2	17.4	17.9	931	922
4	Debagarh	25.5	20.6	19.1	917	918
5	Sundargarh	22.8	19.2	15.8	937	938
6	Kendujhar	25.3	23.0	8.9	957	956
7	Mayurbhanj	26.0	21.1	18.9	952	954
8	Baleshwar	25.2	19.2	23.8	941	947
9	Bhadrak	24.8	19.1	22.9	931	940
10	Kendrapara	21.8	17.3	20.5	921	927
11	Jagatsinghapur	18.8	14.4	23.4	929	934
12	Cuttack	19.6	15.5	20.7	913	922
13	Jajapur	21.8	18.3	16.2	921	924
14	Dhenkanal	21.8	18.1	17.1	870	881
15	Angul	23.4	18.3	21.6	884	894
16	Nayagarh	20.9	17.1	18.1	851	854
17	Khordha	20.3	16.1	20.5	910	920
18	Puri	20.2	15.9	21.5	924	929
19	Ganjam	24.0	18.3	23.8	899	908
20	Gajapati	27.6	24.3	12.1	964	957
21	Kandhamal	30.8	25.1	18.5	960	951
22	Boudh	27.4	22.6	17.7	975	968
23	Subarnapur	NA	19.1	xx	947	947
24	Balangir	22.9	20.8	9.0	951	942
25	Nuapada	25.9	23.1	10.9	971	961
26	Kalahandi	26.8	23.2	13.6	947	926
27	Rayagada	28.5	24.9	12.6	955	951
28	Nabarangpur	30.0	28.2	6.0	988	978
29	Koraput	27.3	26.4	3.3	970	965
30	Malkangiri	28.8	29.5	-2.5	979	983
	Punjab	20.1	16.7	17.0	846	854
1	Gurdaspur	20.6	16.1	21.6	824	829
2	Kapurthala	18.9	15.5	18.1	872	874
3	Jalandhar	17.8	15.1	15.1	874	879
4	Hoshiarpur	19.2	16.0	16.6	859	867
5	Shahid Bhagat Singh Nagar	18.3	15.0	18.3	879	884
6	Fatehgarh Sahib	19.2	15.8	17.7	843	857
7	Ludhiana	19.1	16.4	14.3	865	874
8	Moga	19.5	16.0	18.0	863	870
9	Firozpur	23.3	18.9	18.9	846	854
10	Muktsar	20.8	17.9	13.8	830	841
11	Faridkot	19.5	16.8	13.9	851	855
12	Bathinda	19.6	16.8	14.2	854	860
13	Mansa	21.9	16.9	22.8	831	836
14	Patiala≠	19.6	17.3	11.9	835	846
15	Amritsar≠	21.3	16.8	21.0	824	837
16	Tarn Taran*	NA	18.4	xxx	819	831
17	Rupnagar≠	20.0	15.4	23.0	866	870
18	Sahibzada Ajit Singh Nagar*	NA	18.1	xx	842	850
19	Sangrur≠	20.6	16.9	17.8	835	810
20	Barnala*	NA	16.9	xx	847	822
	Rajasthan	32.1	25.6	20.2	883	889
1	Ganganagar	27.1	20.0	26.4	854	859
2	Hanumangarh	27.2	20.8	23.7	869	874
3	Bikaner	32.8	28.1	14.2	902	903
4	Churu	32.4	24.0	26.0	896	898
5	Jhunjhunu	28.2	20.8	26.2	831	833
6	Alwar	33.2	26.2	21.0	861	872
7	Bharatpur	34.8	28.1	19.1	863	886
8	Dholpur	39.6	30.6	22.8	854	896
9	Karauli	35.9	27.6	23.1	844	874
10	Sawai Madhopur	31.7	25.3	20.2	865	881
11	Dausa	34.4	26.5	22.9	859	873
12	Jaipur	29.6	23.0	22.4	859	862
13	Sikar	29.5	22.3	24.3	841	846
14	Nagaur	32.2	24.7	23.4	888	894
15	Jodhpur	32.9	26.8	18.7	890	900
16	Jaisalmer	39.7	33.1	16.6	868	877
17	Barmer	40.0	33.0	17.4	899	912
18	Jalore	37.3	29.5	20.8	891	900
19	Sirohi	35.3	28.2	20.2	890	890
20	Pali	32.2	24.4	24.1	895	895
21	Ajmer	29.1	24.2	17.0	893	895
22	Tonk	32.1	24.1	24.9	882	881
23	Bundi	30.9	23.6	23.7	886	889
24	Bhilwara	31.3	25.6	18.2	916	904
25	Rajsamand	31.3	25.6	18.2	891	884
26	Udaipur	32.7	28.3	13.4	920	918
27	Dungarpur	37.3	30.9	17.3	916	911
28	Banswara	38.0	32.0	15.8	925	916
29	Chittorgarh	30.0	23.2	22.7	903	904
30	Kota	27.1	21.1	22.0	889	891
31	Baran	31.3	24.8	20.7	902	908
32	Jhalawar	30.5	24.2	20.5	905	904
33	Pratapgarh*	NA	30.0	xx	926	923

(Continued)

Appendix Table A1: Estimates of Crude Birth Rate and Implied Sex Ratio at Birth for Districts, Census 2011 *(Continued)*

		CBR 1994-2000	CBR 2004-10	% Decline over 1994-2000 to 2004-10	CSR, 2011	Implied SRB
	Tamil Nadu	17.2	14.9	13.2	946	946
1	Thiruvallur	18.4	16.2	12.0	954	951
2	Chennai	13.5	13.6	-1.0	964	966
3	Kancheepuram	17.7	16.3	7.8	967	963
4	Vellore	18.6	16.2	13.1	944	943
5	Tiruvannamalai	17.7	16.2	8.4	932	927
6	Vilupuram	18.9	17.3	8.4	938	935
7	Salem	17.4	14.5	16.7	917	930
8	Namakkal	15.3	12.8	16.2	913	919
9	Erode≠	14.7	12.3	16.5	956	955
10	The Nilgiris	16.3	12.3	24.2	982	975
11	Dindigul	17.0	14.5	14.9	942	941
12	Karur	16.3	14.3	12.3	946	945
13	Tiruchirappalli	16.6	14.4	13.0	952	948
14	Perambalur	18.2	15.5	14.6	913	909
15	Ariyalur	19.2	15.6	18.6	892	892
16	Cuddalore	18.7	15.5	17.4	895	890
17	Nagapattinam	17.9	14.6	18.6	961	957
18	Thiruvarur	17.3	13.6	21.2	962	962
19	Thanjavur	17.1	14.0	17.9	957	953
20	Pudukkottai	19.0	15.9	16.3	959	953
21	Sivaganga	16.8	14.9	11.3	961	963
22	Madurai	16.9	15.0	11.1	939	943
23	Theni	16.7	14.2	15.2	937	954
24	Virudhunagar	18.0	14.7	18.1	962	957
25	Ramanathapuram	18.6	14.6	21.3	967	963
26	Thoothukudi	17.2	15.2	11.6	970	961
27	Tirunelveli	17.8	15.2	14.7	964	954
28	Kanyakumari	15.4	13.0	15.4	961	961
29	Dharmapuri≠	20.9	16.9	19.2	911	925
30	Krishnagiri*	NA	17.2	xx	924	939
31	Coimbatore≠	16.4	13.5	17.5	963	959
32	Tiruppur*	NA	14.5	xx	951	948
	Uttar Pradesh	31.4	25.0	20.4	899	911
1	Saharanpur	29.5	24.1	18.4	883	897
2	Muzaffarnagar	31.9	24.9	22.0	858	871
3	Bijnor	33.0	24.4	26.0	870	876
4	Moradabad	34.5	26.8	22.3	909	924
5	Rampur	33.5	27.1	19.1	919	932
6	Jyotiba Phule Nagar	34.1	26.4	22.5	898	912
7	Meerut	27.7	22.7	18.1	850	863
8	Baghpat	27.5	22.8	17.0	837	845
9	Ghaziabad	28.7	24.0	16.2	850	861
10	Gautam Buddha Nagar	31.1	25.8	17.1	845	858
11	Bulandshahr	29.8	25.9	13.1	844	866
12	Aligarh	30.7	25.9	15.8	871	895
13	Mahamaya Nagar	30.6	25.7	15.9	862	888
14	Mathura	32.0	25.9	19.0	871	896
15	Agra	28.3	24.3	14.1	835	858
16	Firozabad	34.1	24.9	26.8	879	899
17	Mainpuri	31.1	24.6	21.0	878	897
18	Budaun	37.7	30.1	20.1	902	930
19	Bareilly	34.1	25.3	25.7	900	913
20	Pilibhit	33.9	25.0	26.4	909	917
21	Shahjahanpur	33.7	28.0	16.8	902	920
22	Kheri	32.8	28.0	14.5	926	934
23	Sitapur	33.0	28.4	13.8	921	931
24	Hardoi	33.8	28.2	16.6	863	883
25	Unnao	29.5	22.6	23.4	913	916
26	Lucknow	24.2	18.9	21.8	913	915
27	Rae Bareli	31.6	23.0	27.2	929	932
28	Farrukhabad	29.8	26.1	12.3	884	905
29	Kannauj	30.7	25.4	17.2	897	912
30	Etawah	29.5	22.7	23.0	870	882
31	Auraiya	30.0	23.4	22.1	895	910
32	Kanpur Dehat	29.0	23.1	20.5	896	897
33	Kanpur Nagar	20.7	17.1	17.5	870	872
34	Jalaun	27.0	21.6	20.1	880	895
35	Jhansi	26.2	20.6	21.3	859	869
36	Lalitpur	36.1	27.8	22.9	914	1060
37	Hamirpur	30.0	21.8	27.3	885	899
38	Mahoba	32.3	23.7	26.6	897	911
39	Banda	32.4	27.3	15.9	898	917
40	Chitrakoot	36.5	29.7	18.5	907	918
41	Fatehpur	31.8	24.0	24.6	905	910
42	Pratapgarh	31.5	22.2	29.6	915	917
43	Kaushambi	34.7	28.4	18.2	926	938
44	Allahabad	30.2	23.9	21.0	902	916
45	Barabanki	33.1	26.7	19.4	930	941
46	Faizabad	34.1	23.2	32.0	927	931
47	Ambedkar Nagar	31.5	22.4	29.0	929	929
48	Sultanpur	32.3	23.8	26.3	921	927
49	Bahraich	36.0	32.2	10.5	933	948
50	Shrawasti	34.0	32.3	5.0	923	952
51	Balrampur	34.2	32.0	6.5	968	995
52	Gonda	33.1	26.9	18.6	924	939
53	Siddharthnagar	36.1	31.8	12.0	922	941
54	Basti	32.4	25.3	22.0	922	930
55	Sant Kabir Nagar	34.4	27.0	21.6	940	944
56	Maharajganj	36.2	26.0	28.2	924	922
57	Gorakhpur	29.9	21.6	27.6	905	905
58	Kushinagar	33.7	25.7	23.8	917	920
59	Deoria	31.1	23.4	24.8	921	917
60	Azamgarh	33.1	24.2	26.8	916	916
61	Mau	33.8	23.9	29.3	924	917
62	Ballia	28.4	22.3	21.6	897	899
63	Jaunpur	32.1	23.8	25.8	916	921
64	Ghazipur	31.8	24.2	24.0	907	912
65	Chandauli	32.7	25.5	22.0	976	986
66	Varanasi	30.1	21.3	29.3	896	904
67	Sant Ravidas Nagar	32.6	26.2	19.5	898	918
68	Mirzapur	33.5	26.4	21.1	902	914
69	Sonbhadra	35.3	28.1	20.4	920	925
70	Etah	34.1	26.7	21.8	878	901
71	Kanshiram Nagar*	NA	29.0	xx	888	911
	West Bengal	22.5	17.3	23.2	950	947
1	Darjeeling	19.6	15.3	22.0	943	941
2	Jalpaiguri	24.9	18.4	26.2	949	942
3	Koch Bihar	25.5	19.0	25.4	948	940
4	Uttar Dinajpur	35.1	25.7	26.8	946	941

(Continued)

Appendix Table A1: Estimates of Crude Birth Rate and Implied Sex Ratio at Birth for Districts, Census 2011 *(Continued)*

		CBR 1994-2000	CBR 2004-10	% Decline over 1994-2000 to 2004-10	CSR, 2011	Implied SRB
5	Dakshin Dinajpur	26.9	16.9	37.1	948	940
6	Maldah	33.0	24.4	26.2	945	940
7	Murshidabad	29.3	22.4	23.6	963	959
8	Birbhum	26.1	19.5	25.3	952	947
9	Barddhaman	20.0	15.6	21.8	947	942
10	Nadia	21.1	15.2	27.9	955	953
11	North Twenty Four Parganas	18.8	13.9	26.3	947	944
12	Hugli	18.1	13.8	23.7	946	944
13	Bankura	22.2	17.1	23.0	943	941
14	Puruliya	24.9	20.6	17.2	947	945
15	Haora	18.0	15.7	12.9	964	961
16	Kolkata	11.8	9.8	16.5	930	930
17	South Twenty Four Parganas	24.7	18.8	23.7	953	951
18	Paschim Medinipur≠	22.6	17.2	23.8	952	952
19	Purba Medinipur*	NA	17.2	xx	938	938
	Arunachal Pradesh	29.9	23.1	22.9	960	961
1	Tawang	30.2	18.6	38.4	1005	999
2	West Kameng	27.3	19.9	27.2	965	954
3	East Kameng	34.1	33.8	0.9	970	951
4	Papum Pare	29.9	21.3	28.9	963	955
5	Upper Subansiri	31.0	24.6	20.7	968	983
6	West Siang	26.1	17.8	31.6	928	930
7	East Siang	27.6	17.4	37.0	984	978
8	Upper Siang	29.5	19.0	35.4	968	963
9	Changlang	32.4	25.7	20.8	954	952
10	Tirap	31.9	26.5	17.0	950	953
11	Lower Subansiri≠	28.7	22.1	23.0	969	976
12	Kurung Kumey*	NA	35.6	xx	978	985
13	Dibang Valley≠	29.3	20.4	30.2	831	834
14	Lower Dibang Valley*	NA	20.9	xx	945	949
15	Lohit≠	31.6	24.0	24.1	954	956
16	Anjaw*	NA	23.6	xx	954	956
	Goa	15.9	14.1	11.3	920	920
1	North Goa	15.4	13.5	12.0	911	911
2	South Goa	16.6	14.8	10.8	930	930
	Himachal Pradesh	20.5	17.7	13.8	906	916
1	Chamba	24.2	21.2	12.2	950	955
2	Kangra	18.8	16.8	10.9	873	883
3	Lahul & Spiti	17.1	14.2	16.7	1013	1005
4	Kullu	22.4	18.6	17.0	962	967
5	Mandi	21.0	17.3	17.6	913	922
6	Hamirpur	18.8	16.2	13.8	881	893
7	Una	21.1	17.6	16.4	870	886
8	Bilaspur	19.7	17.1	13.2	893	901
9	Solan	22.1	18.3	17.4	899	923
10	Sirmaur	24.4	21.0	14.0	931	937
11	Shimla	18.9	16.1	14.9	922	930
12	Kinnaur	NA	15.4	xx	953	954
	Mizoram	27.3	23.5	13.9	971	972
1	Mamit	26.9	28.3	-5.3	979	979
2	Kolasib	27.7	24.0	13.4	987	984
3	Aizawl	24.4	19.7	19.2	984	985
4	Champhai	28.7	26.5	7.7	976	976
5	Serchhip	27.1	21.4	21.0	926	914
6	Lunglei	28.1	23.3	17.1	965	966
7	Lawngtlai	34.1	31.2	8.5	965	987
8	Saiha	32.4	24.6	24.1	937	926
	Meghalaya	33.6	30.1	10.5	970	967
1	West Garo Hills	32.1	28.5	11.1	980	978
2	East Garo Hills	34.2	28.8	15.7	975	977
3	South Garo Hills	36.2	32.6	10.1	973	985
4	West Khasi Hills	38.6	36.0	6.6	975	977
5	Ribhoi	41.2	32.2	21.8	956	947
6	East Khasi Hills	27.7	25.2	9.0	961	960
7	Jaintia Hills	38.0	36.0	5.1	969	963
	Manipur	21.0	19.8	5.8	934	934
1	Senapati	19.3	20.2	-4.5	912	918
2	Tamenglong	22.0	21.0	4.7	941	929
3	Churachandpur	20.5	19.6	4.4	945	959
4	Bishnupur	20.4	18.7	8.1	919	918
5	Thoubal	25.8	23.8	7.7	948	946
6	Imphal West	18.3	16.8	8.4	943	932
7	Imphal East	20.7	20.1	2.8	932	929
8	Ukhrul	23.0	20.2	12.1	921	938
9	Chandel	23.0	17.9	22.3	919	925
	Nagaland	24.1	20.8	13.7	944	945
1	Mon	25.1	22.5	10.4	900	909
2	Mokokchung	16.4	14.5	11.6	954	955
3	Zunheboto	26.9	20.4	24.0	955	956
4	Wokha	23.9	16.9	29.2	970	986
5	Dimapur	25.8	19.8	23.4	968	959
6	Phek	29.0	24.8	14.6	915	918
7	Tuensang≠	24.2	27.0	-11.4	935	949
8	Longleng*	NA	18.9	xx	882	895
9	Kiphire*	NA	25.3	xx	955	969
10	Kohima≠	23.6	20.3	14.0	978	965
11	Peren*	NA	23.0	xx	940	928
	Sikkim	23.7	15.1	36.2	944	947
1	North District	25.5	15.3	40.1	897	895
2	West District	26.5	16.7	36.7	950	945
3	South District	26.4	15.3	42.2	948	945
4	East District	20.6	14.3	30.7	946	955
	Tripura	21.2	18.4	13.3	953	954
1	West Tripura	19.6	16.0	18.5	942	945
2	South Tripura	21.8	19.0	12.8	947	950
3	Dhalai	24.0	22.4	6.7	972	967
4	North Tripura	23.4	21.6	7.6	971	972
	Uttarakhand	26.1	21.3	18.5	886	890
1	Uttarkashi	28.5	22.2	22.0	915	912
2	Chamoli	23.7	20.2	14.9	889	893
3	Rudraprayag	24.9	19.7	21.1	899	900
4	Tehri Garhwal	26.0	20.6	20.9	888	890
5	Dehradun	20.9	19.1	8.8	890	893
6	Garhwal	21.6	17.9	17.2	899	895
7	Pithoragarh	24.5	19.7	19.4	812	815
8	Bageshwar	25.7	20.3	21.1	901	893
9	Almora	23.5	18.7	20.4	921	921
10	Champawat	29.1	23.1	20.7	870	870
11	Nainital	25.0	21.0	16.0	891	894
12	Udham Singh Nagar	29.6	22.9	22.5	896	898
13	Haridwar	29.6	25.3	14.6	869	884

* Indicates newly created districts. ≠ Indicates parent district from which the new districts were carved out.