
**Levels, Differentials and Spatial Patterns
of Childlessness in India**

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Levels, Differentials and Spatial Patterns of Childlessness in India

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Levels, Differentials and Spatial Patterns of Childlessness in India

Usha Ram

Abstract

The paper examines the levels, patterns and differentials of childlessness, the factors affecting childlessness and its consequences on women. The Indian Census datasets of 1981 and 2001 are used to study the objectives. Only the ever married women aged 35-39 who have reported themselves as childless at the time of census enumeration are chosen for the analysis. The paper further measures the levels of permanent childlessness in various regions of India. Also by using GIS package the spatial patterns of childlessness are explored. The finding suggests that the levels of childlessness are moderate in India. The levels vary differently in different regions of the country and within different sub-groups of women like religion, caste and educational status. Southern states of the country have shown higher levels of permanent childlessness compared to that of northern or other states. Women belong to the Schedule Tribe, Christian faith and non-literate group have reported high levels of permanent childlessness. The number of districts with higher level of permanent childlessness is growing over time (1981-2001) while those with lower levels have declined drastically. The GIS analysis shows certain kind of geographical clustering in the level of childlessness in some regions of the country.

Levels, Differentials and Spatial Patterns of Childlessness in India

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Introduction

According to the World Health Organization (WHO, 1997) estimate, globally there are about 60 to 80 million couples with unwanted infertility^{1,2}. The level and patterns of infertility have been found to vary widely across population (Belsey, 1978; WHO, 1975; Belsey, 1976; Sherris and Fox, 1983); the incidence levels in some of the African countries being as high as 20 to 30 percent (Erickson and Brunette, 1996). The World Health Organization (WHO, 1991) pointed out that infertility is widespread in some of the regions and its prevalence reaching such proportions that it can well be considered as a public health problem affecting life of the whole society. In its extreme, infertility compounded with pregnancy wastage, infant and child mortality, may lead to depopulation, which poses serious threat to the social and economic development of a region.

Various factors affect infertility including genetic, psychopathology, disease, nutritional deficiencies and environment (Poston and Trent 1982; 1984)³. Female circumcision (practiced in more than 30 countries of the world which affects around 2 million girls each year) has an impact on infertility levels through health hazards associated with this practice (Anonymous 2005; 2008). Sociologists in various cultural settings have observed that infertility is often linked to adultery, immoral behaviour, witchcraft (Greil 1991; Pearce 1999) or curse due to some activity that had angered ancestors, the deities or anyone in the community (Pearce 1999). Scientists focusing on cultural issues often interpret fertility differentials among women at different educational levels as a consequence of the greater range of possible lifestyles and other choices increasingly available to women with greater educational attainment (Lesthaeghe, 1983; Van, 1987; 1996; Surkyn and Lesthaeghe, 2004; Lappegård, 2002). It is also argued that women lower their preferences for children as they proceed with their education (Rindfuss et. al, 1996) and thus a higher rate of childlessness

¹ There is difference between infertility, sub-fecundity and childlessness, however, in this paper they are being used interchangeably.

² About 8-12% of them have been estimated to be infertile or faced with inability to conceive a child at some point during their reproductive lives with the incidence being similar in most countries independent of the level of country's development (Reproductive Health Outlook 1999).

³ A detailed discussion on the factors associated with sub-fecundity may be seen in McFalls 1979a and 1979b; Guest 1978 and International Fertility Research Program, 1980.

among more educated women, which in part can be attributed to their longer stay in education. Empirical studies (Rindfuss and Bumpass, 1976; Rindfuss et. al, 1980; Kravdal, 2001; Gustafsson, 2001) have found that prolonged education may therefore lead to a postponement of childbearing to a later age, when biological factors may make it more difficult to conceive. Also the desire for having children is likely to decline when women have greater range of options (Jan et.al, 2006).

Etiology of infertility varies from region to region, from one population to another and even from one locality to another within same population. To a major part, involuntary infertility is largely related to conditions that are preventable in nature, such as sexually transmitted diseases⁴ (WHO, 1991; Rowe, 1999), infections and parasitic diseases, iatrogenic healthcare practices, exposure to toxic substances either through the diet or through the environment (Rowe, 1999) and complications suffered during post partum or post abortion period, particularly in illegal induced abortions (WHO, 1991). Further, levels of infertility also depend on the prevalence of 'core' infertility (biological variation in chromosomal, congenital, and endochronological abnormalities) and 'acquired' infertility (geographic variation in infectious, environmental and occupational factors)⁵.

A number of studies have shown varying levels of childlessness among different socioeconomic sub-groups of women. Researchers have argued that the changes in socioeconomic structures and institutions tend to influence reproductive motivation and fertility by specifying the reward structures related with childbearing (Blake, 1973; Hernandez, 1984; Birdsall and Jamison, 1983; Poston and Gu ,1987; Sun, 1984; Poston,1988). Rutstein, and Shah (2004) using Demographic Health Survey datasets of a number of countries found varied levels of childlessness. Bloom (1986)⁶ observed that the changes in the average age at first birth and the trends toward permanent childlessness differs between black and white women in delayed childbearing patterns; and also the relationship among educational attainment, wage levels and timing of childbearing. Vemuri and Manohar (1986) using 1981 census dataset found that in India, woman's education influenced levels of childlessness. Poston and Kramer (1986) observed differential patterns in levels of voluntary and involuntary childlessness among Catholic and non-Catholic women between the ages 30-35 and 40-44 in the United States.

Females in India marry early (Jain, 1975) and the newly married girls are often blessed by the elders to beget large number of children. Childless women and women who could not produce atleast one male child are subjected to prejudice and ill will and social stigma

⁴ According Population Reports (1983), pelvic inflammatory diseases account for more than half of all female infertility in many regions.

⁵ Worldwide anatomical, genetic or immunological factors cause about 5% of infertile couples (WHO 1991).

⁶ He analyzed June 1985 Current Population Survey data for women born between 1935 and 1960 to understand first birth fertility patterns and compared baby-boom generation and those born 20 years earlier, in the 1930s.

(Gandotra and Pandey, 1979). Meade (1979) noted that along with lack of industrialization, cultural factors such as universal and early marriage and childlessness as a social disgrace are the important factors affecting population explosion in India. Despite this, the problem of childlessness in India has been largely overlooked in favor of research and promotion of family planning (IPPF, 1984). It is surprising to note that the issues related to the childlessness do not find any place in either recently declared National Population Policy, 2000 document or National Health Policy, 2002 of the Government of India (Ministry of Health and Family Welfare, 2000; 2002). As a matter of fact infertility research has been neglected both as a health problem and as a subject for social science research. Thrust of both programme and research in the past have been on correlates of high fertility (particularly unwanted fertility) and its regulation, rather than the context of infertility, its causes and consequences (Jejeebhoy, 1998; Menken, 1985; Veevers, 1971). The fertility levels of any population are very much influenced by the levels of childlessness (both voluntary and involuntary) in the population and it plays an important role in determining the levels and differentials of fertility (Roberts, 1972). The evidence in the past has suggested that the decline in impaired fertility leads to an increase in the Total Fertility Rate (Larsen, 1996).

In the recent years, infertility has received considerable international attention (Bonnar et al. 1984; Belsey 1978; Leridon 1979) but its worldwide extent has never been systematically described. The correct assessment of the future needs of various services such as, housing, education, healthcare, demand for various consumer goods etc. would be as much influenced by the levels of childlessness (both in terms of capacity and desire to reproduce), as the fertility levels. Further, very little is known about the characteristics of women who remain childless. Recent analysis by Ram (2008) clearly shows that in India permanent childlessness in urban areas has increased more rapidly compared to the rural areas. According to 1981 census results, nearly 4 percent of ever married women aged 35-39 in India were childless in rural and urban areas of the country. The proportion of such women increased to 6 percent in 2001 in rural areas while in urban areas it increased to over 7 percent. This raises question in our mind – whether such rapid increase in urban areas is any indication of changes in types of childlessness, voluntary versus involuntary, as urbanization and development may lead to rise in latter.

Aims, Data Source and Methodology

Thus in the present paper an attempt is made to examine the levels and differentials of permanent childlessness for India and selected states by some selected socioeconomic characteristics, such as, religion, caste, education, work status, place of residence among the ever married women aged 35-39 years. The analysis has been done using data from census of India. Indian census provides information on children ever born to the ever married women by many background characteristics. This provides us an opportunity to understand differentials in levels of childlessness across various sub-groups of population. A detailed

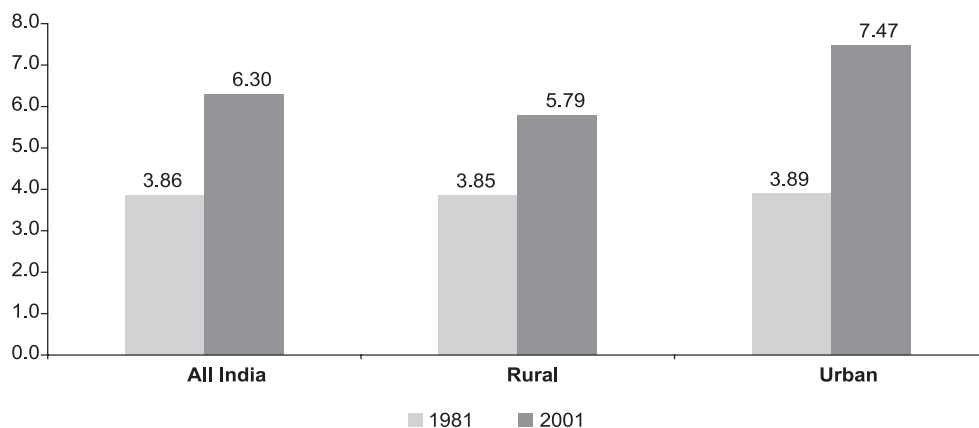
analysis of age patterns of the childlessness in India and its states by some selected background characteristics for the period 1981-2001 was carried out by Ram (2008), which indicated that the levels of the childlessness are fairly stable for the age groups 35-39, 40-44 and 45-49. Further, the analysis of fertility rates by birth order and woman's age indicated that the percentages of women having first order birth at ages 35 or beyond are negligible. In other words, most women have their first babies before they turn 35. In view of this, it was decided to use the childlessness rates for women aged 35-39 years as an indication of the levels of permanent childlessness in the population. The permanent childlessness in the present paper is defined as percentage of ever married women aged 35-39 years who reported themselves as childless at the time of census enumeration (zero parity) out of the total ever married women aged 35-39 years. It would be useful to inform the readers that in the present analysis, only the childlessness of the ever-married women aged 35-39 is studied, not of the men. In order to understand the differentials across various sub-groups of women, ratios of the levels of permanent childlessness among women of various sub-groups to that of the women of reference group are computed⁷. The paper also explores the spatial patterns of childlessness in India with the help of GIS.

Levels of Permanent childlessness: National overview

The Census data indicates that in India there were about 4 percent of the ever married women aged 35-39 years who were childless in 1981, which has increased to 6 percent in 2001. The corresponding figures for rural India were 4 percent and 6 percent and for urban India, 4 percent and over 7 percent respectively (see Figure 1). It is important to note that the level of permanent childlessness in India has increased considerably by 2.44 percentage points between 1981 and 2001; the corresponding increase was far greater in urban areas compared to the rural areas, 3.58 and 1.94 percentage points respectively.

Table 1 gives the levels and ratios of permanent childlessness in 2001 by religion, caste and educational status of women for India, as well as separately for rural and urban areas. The levels of permanent childlessness varies across various subgroups of the population for the nation as a whole, and in urban and rural areas. For example, level of permanent childlessness was higher among Christian women compared to the women belonging to any other religious faith; over 8 percent of the ever married Christian women aged 35-39

⁷ The ratios across various sub-groups of women have been calculated with respect to a reference category. For example, in case of religion we have computed ratios for other religions by taking levels for 'Hindu' as reference category. Likewise, the reference category for computing the ratios for Caste and education is 'SC women' and 'Non-literate women', respectively. A ratio value of less than unity would mean that the levels of permanent childlessness are relatively higher for women in the reference group compared to other women while a value greater than one would indicate that the levels are relatively lower for the women in the reference group. A value of unity would indicate no difference in the levels of permanent childlessness among the women in the reference group and those in other groups.

Figure 1: Permanent childlessness in India, 1981 and 2001

years were childless in 2001, compared to slightly over 6 percent of Hindu and Muslim women while it was less than 6 percent among women from other religious faiths. The Scheduled Tribe (ST) women reported relatively higher level of permanent childlessness (about 7%) compared to Scheduled Caste (SC) and Non-scheduled Caste/Tribe (Non-SC/ST) women (about 6%).

Table 1: Levels of permanent childlessness and ratios by selected background characteristics of the women, India 2001

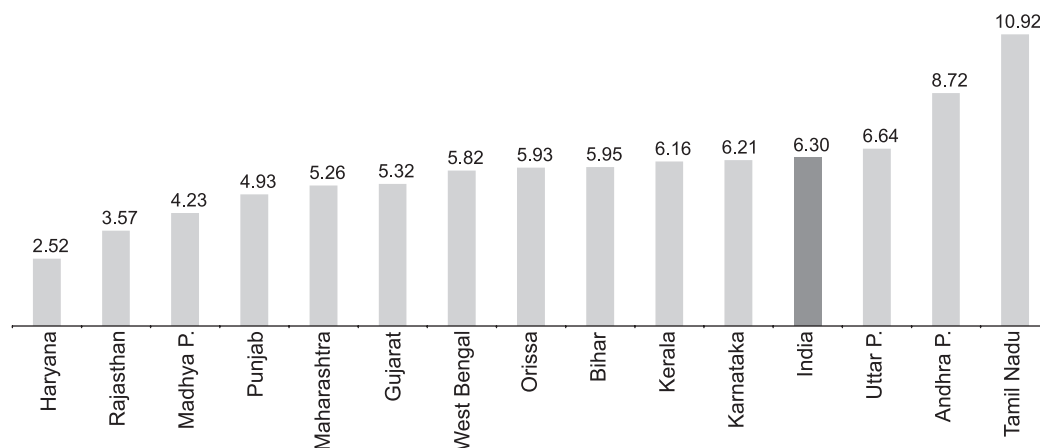
| Sub-groups / Categories of woman | All India | | Urban | | Rural | |
|----------------------------------|-------------|-------|-------------|-------|-------------|-------|
| | Percent | Ratio | Percent | Ratio | Percent | Ratio |
| Religion | | | | | | |
| Hindu | 6.23 | 1.00 | 7.41 | 1.00 | 5.76 | 1.00 |
| Muslim | 6.53 | 1.05 | 7.85 | 1.06 | 5.75 | 1.00 |
| Christian | 8.13 | 1.30 | 9.31 | 1.26 | 7.47 | 1.30 |
| Others | 5.73 | 0.92 | 6.08 | 0.82 | 5.54 | 0.96 |
| Caste | | | | | | |
| Schedule Caste (SC) | 5.75 | 1.00 | 6.65 | 1.00 | 5.50 | 1.00 |
| Scheduled Tribe (ST) | 6.73 | 1.17 | 7.03 | 1.06 | 6.70 | 1.22 |
| Non-SC/ST | 6.37 | 1.11 | 7.59 | 1.14 | 5.73 | 1.04 |
| Educational status | | | | | | |
| Non-literate | 6.02 | 1.00 | 7.27 | 1.00 | 5.75 | 1.00 |
| 1-7 years of schooling | 5.62 | 0.93 | 6.58 | 0.91 | 5.16 | 0.90 |
| 8-9 years of schooling | 6.08 | 1.01 | 6.83 | 0.94 | 5.45 | 0.95 |
| 10-14 years of schooling | 7.30 | 1.21 | 7.64 | 1.05 | 6.76 | 1.18 |
| 15 or more years of schooling | 5.62 | 0.93 | 6.58 | 0.91 | 5.16 | 0.90 |
| Total | 6.30 | | 7.47 | | 5.79 | |

Source: Census of India, 2001.

In terms of ratios, for every 100 childless Hindu women there were 130 Christian childless women, while their number was about 105 among Muslim women. In contrast, there were only 92 childless women among those belonging to Other religious faiths for every 100 childless Hindu women. Somewhat similar pattern was observed in the rural and urban areas of the country. However, the gap between Christian and Hindu women, was slightly wider in rural areas than they were in urban areas; for every 100 childless Hindu women in there were 130 childless Christian women in rural areas whereas their number in urban areas was 126. In case of Muslim women, there were 106 childless Muslim women in urban areas for every 100 childless Hindu women, whereas it was similar for both Hindu and Muslim women in rural areas. Among women from Other religious faiths, the gap was wider in urban areas compared to rural areas - for every 100 childless Hindu women there were only 82 childless women from Other religious faith in urban areas and 96 in rural areas. There were about 111 childless ST women and 117 Non-SC/ST women for every 100 childless SC women. In case of the educational status of childless women, the patterns are rather unclear at the national level. However, some observations are made for urban and rural areas. With the exception of women who have completed 10-14 years of schooling, educated women were less likely to report childlessness compared to the non-literate women. For example, there were only 91-94 childless women for every 100 childless women among non-literate women in the urban areas. Similarly, there were about 90-95 childless women in various educational categories for every 100 childless non-literate women in the rural areas of the country. Interestingly, for every 100 childless non-literate women in rural and urban areas, there were only 90-91 childless women respectively, among those who had completed 15 or more years of schooling.

Levels of Permanent childlessness: State overview

Before understanding the differentials in permanent childlessness by various characteristics of the woman, it would be useful to understand its variability in different states of India; hence the level of the permanent childlessness for 14 major states of India is presented in Figure 2. These states together comprise over 96 percent of India's population. The figure clearly reveals that in 2001 the level of permanent childless vary considerably in India from one state to another; from a low of just about 2 percent in Haryana to nearly 9 percent in Andhra Pradesh and 11 percent in Tamil Nadu. Out of the 14 major states included, three have higher levels of permanent childlessness than the national average, of these, two are southern states, Andhra Pradesh and Tamil Nadu. Incidentally both the states have achieved below replacement fertility levels. The third state is Uttar Pradesh with level of permanent childlessness at about 7 percent. In contrast, Rajasthan and Madhya Pradesh have relatively lower levels (at about 4%), interestingly fertility levels in these states continue to be on the higher side. States like Punjab, Maharashtra and Gujarat reported relatively moderate levels of permanent childless (at about 5%) while it was close to 6 percent in states of West Bengal, Orissa, Bihar, Kerala and Karnataka.

Figure 2: Permanent Childlessness in states of India, 2001

In order to make the analysis more reader friendly, the differentials in levels of permanent childlessness at state levels have been studied for five selected states only. For this, the state having highest level of permanent childlessness within every region in 2001 was selected for the further analysis. The five states selected were Bihar, Gujarat, Punjab, Tamil Nadu and Uttar Pradesh, one each from each of the five geographical region of the country as shown below. The differentials in childlessness have been examined by the place of residence, religion, caste and educational status of the woman for 2001.

| Region | Name of the States by level of permanent childlessness (%) in 2001 |
|----------------|---|
| North | Haryana (2.52); Punjab (4.93) ; Rajasthan (3.57) |
| East | West Bengal (5.82); Orissa (5.93); Bihar (5.95) |
| Central | Madhya Pradesh (4.23); Uttar Pradesh (6.64) |
| West | Maharashtra (5.26); Gujarat (5.32) |
| South | Andhra Pradesh (8.72); Karnataka (6.73); Kerala (6.16); Tamil Nadu (10.92) |

Levels and Differentials of Permanent Childlessness by Place of Residence

Table 2 provides levels of permanent childlessness in India and in the selected states by place of residence of the woman and also the childlessness ratio of urban levels to that of the rural in 2001. The levels of permanent childlessness vary considerably across rural and urban areas in all the states selected. About 4-5 percent rural women aged 35-39 years in Gujarat and Punjab were childless while their share was nearly 6 percent each in Bihar and Uttar Pradesh, and considerably high in Tamil Nadu (10%). In urban areas,

Table 2: Levels of permanent childlessness by place of residence of the woman in selected states of India, 2001

| Name of the state | Levels of permanent childless | | | Ratio of urban to rural |
|-------------------|-------------------------------|-------------|-------------|-------------------------|
| | All India | Urban | Rural | |
| Bihar | 5.95 | 6.40 | 5.89 | 1.09 |
| Gujarat | 5.32 | 6.28 | 4.68 | 1.34 |
| Punjab | 4.93 | 5.96 | 4.35 | 1.37 |
| Tamil Nadu | 10.92 | 12.11 | 9.98 | 1.21 |
| Uttar Pradesh | 6.64 | 8.57 | 6.06 | 1.41 |
| India | 6.30 | 7.47 | 5.79 | 1.21 |

Source: Census of India, 2001.

nearly 6 percent each of women in Bihar, Gujarat and Punjab were childless in 2001 while their share in Uttar Pradesh and Tamil Nadu was as high as 9 percent and 12 percent respectively.

In terms of rural-urban differentials, as measured by ratios, the proportions of childless women was more in urban areas than the rural areas in all states as the ratio in all cases exceed unity. Further, the extent of rural-urban gap varies considerably across selected states. For example, in Uttar Pradesh there were 141 childless women in urban areas for every 100 childless women in the rural areas. The corresponding numbers for Gujarat, Punjab and Tamil Nadu were 134, 137 and 121 respectively. The urban-rural gap in this respect was narrow in Bihar; there were about 109 childless women in urban areas for every 100 such women in the rural areas.

Levels and Differentials of Permanent Childlessness by Religion

Table 3 gives levels of permanent childlessness for Hindu, Muslim, Christian and women belonging to other religions in 2001 for the selected states and their urban and rural areas. As seen for the country as a whole (urban and rural), the levels of permanent childlessness vary considerably for women from various religious faiths in all the selected states.

Further, there are variations across states for women belonging to same religious faiths. For example, the permanent childlessness in Bihar and Gujarat varies from 5.87 percent and 5.15 percent, respectively, for Hindu women to 8.08 percent and 7.47 percent, respectively for those belonging to other religious faiths. In Punjab, it varies from a low of 4.74 percent for women of other religions to 5.29 percent for Christian women. The corresponding range for Uttar Pradesh is 4.75 percent for Muslim women to 10.75 percent for Christian women and for Tamil Nadu is 10.67 percent among Muslim women to 19.66 percent for those from other religions. Similar patterns may be observed for urban and rural areas of the states.

Table 3: Levels of permanent childlessness by religion in selected states of India, 2001

| State | Religion of the woman | | | | Ratio to Hindu | | | |
|------------------|-----------------------|-------------|-------------|----------------|----------------|-------------|-------------|----------------|
| | Hindu | Muslim | Christian | Other religion | Hindu | Muslim | Christian | Other religion |
| All India | | | | | | | | |
| Bihar | 5.87 | 6.32 | 8.01 | 8.08 | 1.00 | 1.08 | 1.36 | 1.38 |
| Gujarat | 5.15 | 6.68 | 6.08 | 7.47 | 1.00 | 1.30 | 1.18 | 1.45 |
| Punjab | 5.24 | 4.92 | 5.29 | 4.74 | 1.00 | 0.94 | 1.01 | 0.90 |
| Tamil Nadu | 10.92 | 10.67 | 10.84 | 19.66 | 1.00 | 0.98 | 0.99 | 1.80 |
| Uttar Pradesh | 6.52 | 4.75 | 10.75 | 7.82 | 1.00 | 0.73 | 1.65 | 1.20 |
| India* | 6.23 | 6.53 | 8.13 | 5.73 | 1.00 | 1.05 | 1.30 | 0.92 |
| Urban | | | | | | | | |
| Bihar | 6.07 | 7.83 | 8.11 | 8.21 | 1.00 | 1.29 | 1.34 | 1.35 |
| Gujarat | 6.05 | 7.45 | 7.49 | 7.52 | 1.00 | 1.23 | 1.24 | 1.24 |
| Punjab | 6.09 | 6.15 | 7.36 | 5.74 | 1.00 | 1.01 | 1.21 | 0.94 |
| Tamil Nadu | 12.23 | 10.91 | 11.82 | 19.51 | 1.00 | 0.89 | 0.97 | 1.60 |
| Uttar Pradesh | 8.56 | 8.49 | 12.11 | 9.19 | 1.00 | 0.99 | 1.41 | 1.07 |
| India* | 7.41 | 7.85 | 9.31 | 6.08 | 1.00 | 1.06 | 1.26 | 0.82 |
| Rural | | | | | | | | |
| Bihar | 5.85 | 6.22 | 7.93 | 8.03 | 1.00 | 1.06 | 1.36 | 1.37 |
| Gujarat | 4.61 | 5.52 | 4.96 | 7.15 | 1.00 | 1.20 | 1.08 | 1.55 |
| Punjab | 4.10 | 4.03 | 4.36 | 4.44 | 1.00 | 0.98 | 1.06 | 1.08 |
| Tamil Nadu | 9.99 | 10.06 | 9.52 | 20.04 | 1.00 | 1.01 | 0.95 | 2.01 |
| Uttar Pradesh | 6.01 | 6.29 | 8.35 | 6.85 | 1.00 | 1.05 | 1.39 | 1.14 |
| India* | 5.76 | 5.75 | 7.47 | 5.54 | 1.00 | 1.00 | 1.30 | 0.96 |

Source: Census of India, 2001.

Note: * Figures for India have been included only for reference purpose.

With a few exceptions, Hindu women reported lower levels of permanent childlessness in most of the states selected for analysis as compared to the women from any other religions. For example, Muslim women in Uttar Pradesh reported lower levels compared to the Hindu women - there were only 73 childless Muslim women for every 100 childless Hindu women. In contrast, there were 108 childless Muslim women in Bihar and 130 in Gujarat for every 100 childless Hindu women. With the exception of Tamil Nadu, Christian women on the whole have reported higher level childlessness in all the selected states. For example, there were 165 childless Christian women in Uttar Pradesh and 136 in Bihar for every 100 childless Hindu women. Women from Other religious faiths too have reported higher permanent childlessness levels in all states except Punjab. For example, there were 180 childless women from Other religious faiths in Tamil Nadu and 138 to 145 in Bihar and Gujarat and 110 to 120 in Uttar Pradesh for every 100 childless Hindu women. Whereas, in Punjab there were only 90 childless women from Other religious faiths for every 100 childless

Hindu women. Inter-state comparison shows that the differences were wider in Tamil Nadu and Uttar Pradesh and were somewhat moderate in Bihar and Gujarat, while they were marginal in Punjab.

The patterns seem to be almost similar for rural and urban areas. However, in Bihar and Gujarat, Hindu-Muslim differentials in levels of permanent childlessness were wider in rural areas than in urban areas. In contrast, the levels of childlessness were lower for Muslim women in Tamil Nadu and Uttar Pradesh in rural areas compared to their urban counterparts.

Levels and Differentials of Permanent Childlessness by Caste

The level of permanent childlessness and the ratios by caste of the woman in 2001 are presented in table 4 for all the selected states by place of residence. The data indicates considerable variations in the permanent childlessness levels across various caste groups in the selected states; the levels were relatively higher in Tamil Nadu for all the three ethnic

Table 4: Levels of permanent childlessness by woman's caste for selected states, India, 2001

| State | Caste of the woman | | | Ratio to SC | | |
|--------------------------------------|--------------------|-------------|-------------|-------------|-------------|-------------|
| | SC | ST | Non-SC/ST | SC | ST | Non-SC/ST |
| All India (Rural & Urban) | | | | | | |
| Bihar | 5.73 | 7.87 | 5.97 | 1.00 | 1.37 | 1.04 |
| Gujarat | 4.73 | 5.54 | 5.34 | 1.00 | 1.17 | 1.13 |
| Punjab | 4.02 | NA | 5.27 | 1.00 | NA | 1.31 |
| Tamil Nadu | 10.29 | 14.13 | 11.03 | 1.00 | 1.37 | 1.07 |
| Uttar Pradesh | 5.79 | 7.72 | 6.86 | 1.00 | 1.33 | 1.18 |
| India | 5.75 | 6.73 | 6.37 | 1.00 | 1.17 | 1.11 |
| Urban | | | | | | |
| Bihar | 5.55 | 7.25 | 6.49 | 1.00 | 1.31 | 1.17 |
| Gujarat | 5.54 | 6.74 | 6.33 | 1.00 | 1.22 | 1.14 |
| Punjab | 5.24 | NA | 6.14 | 1.00 | NA | 1.17 |
| Tamil Nadu | 11.49 | 10.26 | 12.22 | 1.00 | 0.89 | 1.06 |
| Uttar Pradesh | 7.62 | 9.95 | 8.70 | 1.00 | 1.31 | 1.14 |
| India | 6.65 | 7.03 | 7.59 | 1.00 | 1.06 | 1.14 |
| Rural | | | | | | |
| Bihar | 5.74 | 7.90 | 5.90 | 1.00 | 1.38 | 1.03 |
| Gujarat | 4.13 | 5.41 | 4.50 | 1.00 | 1.31 | 1.09 |
| Punjab | 3.58 | NA | 4.70 | 1.00 | NA | 1.31 |
| Tamil Nadu | 9.77 | 14.83 | 9.95 | 1.00 | 1.52 | 1.02 |
| Uttar Pradesh | 5.50 | 7.39 | 6.22 | 1.00 | 1.34 | 1.13 |
| India | 5.50 | 6.70 | 5.73 | 1.00 | 1.22 | 1.04 |

Source: Census of India, 2001.

Note: * Figures for India have been included only for reference purpose.

sub-groups compared to other selected states. For example, there were about 4-6 percent of women from Scheduled Caste (SC) in Bihar, Gujarat, Punjab and Uttar Pradesh, whereas it was over 10 percent in Tamil Nadu. Among Schedule Tribe (ST) women, it varied from a high of over 14 percent in Tamil Nadu to about 5-8 percent in the remaining states; while for Non-SC/ST women, it ranged between 11 percent in Tamil Nadu and around 5-7 percent in the remaining states.

In terms of childlessness ratios, an interesting finding emerged from the analysis. The levels of permanent childlessness were higher for ST and Non-SC/ST women compared to the SC women in all the selected states. Further, the extent of differentials varied from one group to another within the same state and also across states for same group of women. For example, the gap between ST and SC women was greater than that between Non-SC/ST women and SC women in all states; there were about 117 to 137 childless ST women for ever 100 childless schedule caste women. In case of Non-SC/ST women, this ranged between 104 to 131.

The value of this ratio was greater than unity in all states under analysis with only one exception of urban Tamil Nadu, where this ratio for ST women was below unity (0.89).

Another interesting finding emerged is that the difference in levels of permanent childlessness between SC and ST women were greater in the rural areas compared to urban areas in all states. In case of women belong to Non-SC/ST and SC it was found that the gap was wider in urban areas of Punjab and it was narrower in rural areas of Bihar and Gujarat. In Uttar Pradesh the gap was quite similar in both rural and urban areas.

Levels and Differentials of Permanent Childlessness by education

Table 5 provides levels and ratios of permanent childlessness for 2001 by educational status of the woman for selected states of India by place of residence. The findings suggest that the levels of childlessness vary by educational status of the woman for all states; the levels actually rise with advancement in the educational status of the woman. For example, about 4-6 percent of non-literate women in Bihar, Gujarat, Punjab and Uttar Pradesh and about 11 percent of them in Tamil Nadu were childless. Whereas, among those who had completed graduate or higher education, their proportion was over 6 percent in Punjab, 8-9 percent in Bihar and Gujarat, 11 percent in Uttar Pradesh and nearly 16 percent in Tamil Nadu. Similar observations were made for rural and urban areas as well.

With respect to ratios, with only four exceptions, the value of the ratio always exceeded unity (also true separately rural and urban areas) indicating that the levels of permanent childlessness go up with improvement in educational status of the woman. For example, there were about 150 to 181 childless women among those who had completed 15 years

Table 5: Levels of permanent childlessness by woman's education status for selected states, India, 2001

| State | Educational status of the woman | | | | | Ratio to Non-literate | | | | |
|--------------------------------------|---------------------------------|-------------|-------------|-------------|-------------|-----------------------|-------------|-------------|-------------|-------------|
| | Non-literate | 1-7 yrs. | 8-9 yrs. | 10-14 yrs. | 15 or more | Non-literate | 1-7 yrs. | 8-9 yrs. | 10-14 yrs. | 15 or more |
| All India (Rural & Urban) | | | | | | | | | | |
| Bihar | 5.68 | 5.76 | 6.24 | 7.04 | 8.62 | 1.00 | 1.01 | 1.10 | 1.24 | 1.52 |
| Gujarat | 4.90 | 5.02 | 5.59 | 6.04 | 8.15 | 1.00 | 1.02 | 1.14 | 1.23 | 1.66 |
| Punjab | 4.34 | 4.29 | 5.23 | 5.70 | 6.48 | 1.00 | 0.99 | 1.21 | 1.31 | 1.49 |
| Tamil Nadu | 10.54 | 10.03 | 10.33 | 11.99 | 15.82 | 1.00 | 0.95 | 0.98 | 1.14 | 1.50 |
| Uttar Pradesh | 5.97 | 6.52 | 7.14 | 9.04 | 10.82 | 1.00 | 1.09 | 1.20 | 1.51 | 1.81 |
| India | 6.02 | 5.62 | 6.08 | 7.30 | 9.00 | 1.00 | 0.93 | 1.01 | 1.21 | 1.50 |
| Urban | | | | | | | | | | |
| Bihar | 6.20 | 5.77 | 5.78 | 6.37 | 7.93 | 1.00 | 0.93 | 0.93 | 1.03 | 1.28 |
| Gujarat | 6.07 | 5.64 | 6.05 | 6.38 | 8.15 | 1.00 | 0.93 | 1.00 | 1.05 | 1.34 |
| Punjab | 5.73 | 5.42 | 6.14 | 5.88 | 6.26 | 1.00 | 0.95 | 1.07 | 1.03 | 1.09 |
| Tamil Nadu | 12.24 | 10.82 | 11.25 | 12.53 | 16.20 | 1.00 | 0.88 | 0.92 | 1.02 | 1.32 |
| Uttar Pradesh | 7.75 | 7.72 | 8.07 | 9.13 | 10.55 | 1.00 | 1.00 | 1.04 | 1.18 | 1.36 |
| India | 7.27 | 6.58 | 6.83 | 7.64 | 8.94 | 1.00 | 0.91 | 0.94 | 1.05 | 1.23 |
| Rural | | | | | | | | | | |
| Bihar | 5.65 | 5.75 | 6.38 | 7.41 | 9.56 | 1.00 | 1.02 | 1.13 | 1.31 | 1.69 |
| Gujarat | 4.53 | 4.51 | 4.92 | 5.27 | 8.16 | 1.00 | 1.00 | 1.09 | 1.16 | 1.80 |
| Punjab | 3.91 | 3.88 | 4.62 | 5.46 | 7.76 | 1.00 | 0.99 | 1.18 | 1.40 | 1.98 |
| Tamil Nadu | 9.89 | 9.35 | 9.01 | 10.60 | 13.51 | 1.00 | 0.95 | 0.91 | 1.07 | 1.37 |
| Uttar Pradesh | 5.65 | 6.08 | 6.61 | 8.90 | 12.17 | 1.00 | 1.08 | 1.17 | 1.58 | 2.15 |
| India | 5.75 | 5.16 | 5.45 | 6.76 | 9.30 | 1.00 | 0.90 | 0.95 | 1.18 | 1.62 |

Source: Census of India, 2001.

Note: * Figures for India have been included only for reference purpose.

of schooling or more for every 100 childless women among non-literate in all states included in the analysis. However, the differences are more prominent in states of Uttar Pradesh and Gujarat. And also the gap between highly educated and non-literate women widens considerably in rural areas as compared to the urban areas (see last panel of table 5).

Levels of Permanent Childlessness: District Scenario

This section tried to understand the distribution of districts in India by levels of childlessness in 1981 and 2001. This has been done by classifying the districts in the following three broad categories on the basis of levels of childless⁸ among women:

⁸ The classification of districts in the three categories of low, medium and high is to some extent arbitrary. However, as mentioned in the literature, 2-3% of infertility is considered as inevitable in any population. The WHO recommends that 7-8% childlessness levels in a population should be considered as a major public health concern and the program should give greater attention to this issue. Accordingly we decided to group districts in this manner.

| Category | Percentage of childless women |
|---|--------------------------------------|
| Group I: Low Prevalence Districts (LPD) | Up to 2.50 % |
| Group II: Medium Prevalence Districts (MPD) | 2.51 to 7.50 % |
| Group III: High Prevalence Districts (HPD) | Greater than 7.50 % |

Majority of districts in India fall in medium prevalence district group (MPD), about 66 percent and 75 percent districts in 1981 and 2001, respectively, had 2.51 to 7.5 percent of childless women aged 35-39 years. Nearly 29 percent of districts in 1981 were low prevalence districts (LPD), which declined to 3 percent in 2001. About 5 percent districts in 1981 were high prevalence districts (HPD) which increased to 22 percent in 2001; indicating a dramatic shift in the position of many districts from low ore medium prevalence to high prevalence.

Similar pattern may be seen in the rural and urban areas as well, however, proportion of districts in HPD group was quite similar in 1981 (at about 5-6%) which has increased considerably in both the areas but much more rapid in urban areas than the rural areas in 2001 (27% compared to 20%). In contrast, proportion of districts in LPD group was 26 percent and 31 percent during 1981 and 2001 respectively in urban and rural areas which by 2001 came down to just about 2 percent in urban areas and about 5 percent in rural areas.

Tables no.6.a, b and c depict the prevalence of childlessness in various states of India and also at rural and urban areas. Of the 115 low prevalence districts in 1981, 27 were from undivided Uttar Pradesh followed by Karnataka (19), Maharashtra (11), West Bengal (10) and Arunachal Pradesh (9) - thus comprising of about two-thirds of the total districts in this category. Of the 18 low prevalence districts in 2001, 11 were from Haryana, 6 from Rajasthan,

Figure 3: Distribution of districts by levels of permanent childlessness in India, 1981 and 2001

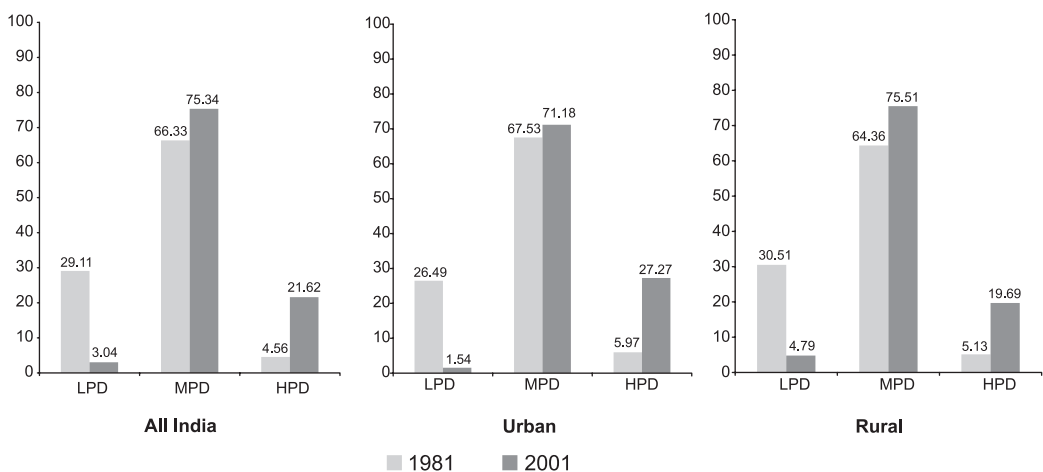


Table 6.a: Distribution of Districts by the levels of permanent childlessness in India, 1981 & 2001

| State/UTs | 1981 | | | | 2001 | | | |
|----------------------|--------------|--------------|-------------|------------|-------------|--------------|--------------|------------|
| | Low | Medium | High | Total | Low | Medium | High | Total |
| Andhra Pradesh | 0 | 16 | 7 | 23 | 0 | 7 | 16 | 23 |
| Bihar | 5 | 26 | 0 | 31 | 0 | 33 | 4 | 37 |
| Jharkhand | | | | | 0 | 13 | 3 | 16 |
| Gujarat | 0 | 19 | 0 | 19 | 0 | 25 | 0 | 25 |
| Haryana | 4 | 8 | 0 | 12 | 11 | 8 | 0 | 19 |
| Jammu & Kashmir | 0 | 13 | 1 | 14 | 0 | 6 | 8 | 14 |
| Karnataka | 19 | 0 | 0 | 19 | 0 | 24 | 3 | 27 |
| Kerala | 6 | 6 | 0 | 12 | 0 | 14 | 0 | 14 |
| Madhya Pradesh | 2 | 39 | 4 | 45 | 0 | 45 | 0 | 45 |
| Chhatisgarh | | | | | 0 | 20 | 0 | 20 |
| Maharashtra | 11 | 15 | 0 | 26 | 0 | 34 | 1 | 35 |
| Orissa | 0 | 10 | 3 | 13 | 0 | 22 | 8 | 30 |
| Punjab | 1 | 11 | 0 | 12 | 0 | 17 | 0 | 17 |
| Rajasthan | 0 | 26 | 0 | 26 | 6 | 26 | 0 | 32 |
| Tamil Nadu | 0 | 16 | 0 | 16 | 0 | 0 | 30 | 30 |
| Uttar Pradesh | 27 | 28 | 1 | 56 | 0 | 55 | 15 | 70 |
| Uttarnchal | | | | | 0 | 6 | 0 | 6 |
| West Bengal | 10 | 6 | 0 | 16 | 0 | 15 | 3 | 18 |
| Andaman&N Island | 1 | 1 | 0 | 2 | 0 | 1 | 1 | 2 |
| Arunachal Pradesh | 9 | 0 | 0 | 9 | 0 | 11 | 2 | 13 |
| Himachal Pradesh | 7 | 5 | 0 | 12 | 1 | 11 | 0 | 12 |
| Manipur | 1 | 3 | 2 | 6 | 0 | 1 | 8 | 9 |
| Meghalaya | 5 | 0 | 0 | 5 | 0 | 0 | 7 | 7 |
| Mizoram | 3 | 0 | 0 | 3 | 0 | 8 | 0 | 8 |
| Nagaland | 3 | 4 | 0 | 7 | 0 | 1 | 7 | 8 |
| Pondicherry | 1 | 3 | 0 | 4 | 0 | 4 | 0 | 4 |
| Sikkim | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 4 |
| Goa | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 |
| Daman Diu | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 |
| Assam | NA | NA | NA | 0 | 0 | 13 | 10 | 23 |
| Tripura | NA | NA | NA | 0 | 0 | 15 | 0 | 15 |
| Delhi | NA | NA | NA | 0 | 0 | 3 | 0 | 3 |
| Chandigarh | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| DN Haveli | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| Lakshadweep | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| All INDIA (N) | 115 | 262 | 18 | 395 | 18 | 446 | 128 | 592 |
| % | 29.11 | 66.33 | 4.56 | 100 | 3.04 | 75.34 | 21.62 | 100 |

Source: Census of India, 1981 and 2001 (Same for the following two tables)

Table 6.b: Distribution of Districts by the levels of permanent childlessness in Rural India, 1981 & 2001.

| State/UTs | 1981 | | | | 2001 | | | |
|----------------------|--------------|--------------|-------------|------------|-------------|--------------|--------------|---------------|
| | Low | Medium | High | Total | Low | Medium | High | Total |
| Andhra Pradesh | 0 | 15 | 7 | 22 | 0 | 11 | 11 | 22 |
| Bihar | 6 | 25 | 0 | 31 | 0 | 34 | 3 | 37 |
| Jharkhand | | | | | 0 | 12 | 6 | 18 |
| Gujarat | 0 | 19 | 0 | 19 | 0 | 25 | 0 | 25 |
| Haryana | 3 | 9 | 0 | 12 | 16 | 3 | 0 | 19 |
| Jammu & Kashmir | 0 | 13 | 1 | 14 | 0 | 6 | 8 | 14 |
| Karnataka | 19 | 0 | 0 | 19 | - | 25 | 2 | 27 |
| Kerala | 6 | 6 | 0 | 12 | 0 | 14 | 0 | 14 |
| Madhya Pradesh | 3 | 38 | 4 | 45 | 0 | 45 | 0 | 45 |
| Chhatisgarh | | | | | 0 | 14 | 2 | 16 |
| Maharashtra | 11 | 14 | 0 | 25 | 0 | 33 | 0 | 33 |
| Orissa | 0 | 9 | 4 | 13 | 0 | 22 | 8 | 30 |
| Punjab | 1 | 11 | 0 | 12 | 0 | 17 | 0 | 17 |
| Rajasthan | 0 | 26 | 0 | 26 | 8 | 24 | 0 | 32 |
| Tamil Nadu | 0 | 15 | 0 | 15 | 0 | 1 | 28 | 29 |
| Uttar Pradesh | 29 | 25 | 2 | 56 | 0 | 60 | 10 | 70 |
| Uttarnchal | | | | | 0 | 13 | 0 | 13 |
| West Bengal | 11 | 4 | 0 | 15 | 0 | 15 | 2 | 17 |
| Andaman&N Island | 1 | 1 | 0 | 2 | 0 | 1 | 1 | 2 |
| Arunachal Pradesh | 9 | 0 | 0 | 9 | 0 | 11 | 2 | 13 |
| Himachal Pradesh | 7 | 5 | 0 | 12 | 1 | 11 | 0 | 12 |
| Manipur | 1 | 3 | 2 | 6 | 0 | 1 | 8 | 9 |
| Meghalaya | 5 | 0 | 0 | 5 | 0 | 0 | 7 | 7 |
| Mizoram | 3 | 0 | 0 | 3 | 0 | 8 | 0 | 8 |
| Nagaland | 3 | 4 | 0 | 7 | 0 | 1 | 7 | 8 |
| Pondicherry | 1 | 2 | 0 | 3 | 0 | 2 | 0 | 2 |
| Sikkim | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 4 |
| Goa | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 |
| Daman Diu | 0 | 2 | 0 | 2 | 1 | 1 | 0 | 2 |
| Assam | NA | NA | NA | 0 | 0 | 15 | 8 | 23 |
| Tripura | NA | NA | NA | 0 | 0 | 4 | 0 | 4 |
| Delhi | NA | NA | NA | 0 | 2 | 5 | 0 | 7 |
| Chandigarh | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| DN Haveli | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| Lakshadweep | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| All INDIA (N) | 119 | 251 | 20 | 390 | 28 | 441 | 115 | 584 |
| % | 30.51 | 64.36 | 5.13 | 100 | 4.79 | 75.51 | 19.69 | 100.00 |

Table 6.c : Distribution of Districts by the levels of permanent childlessness in Urban India, 1981 & 2001

| State/UTs | 1981 | | | | 2001 | | | |
|--------------------|--------------|--------------|-------------|------------|-------------|--------------|--------------|---------------|
| | Low | Medium | High | Total | Low | Medium | High | Total |
| Andhra Pradesh | 0 | 13 | 10 | 23 | 0 | 5 | 18 | 23 |
| Bihar | 0 | 31 | 0 | 31 | 0 | 31 | 6 | 37 |
| Jharkhand | | | | | 0 | 16 | 2 | 18 |
| Gujarat | 0 | 18 | 0 | 18 | 0 | 22 | 2 | 24 |
| Haryana | 3 | 9 | 0 | 12 | 5 | 14 | 0 | 19 |
| Jammu & Kashmir | 2 | 11 | 1 | 14 | 0 | 7 | 7 | 14 |
| Karnataka | 19 | 0 | 0 | 19 | 0 | 19 | 8 | 27 |
| Kerala | 1 | 10 | 0 | 11 | 0 | 11 | 3 | 14 |
| Madhya Pradesh | 4 | 35 | 6 | 45 | 0 | 45 | 0 | 45 |
| Chhatisgarh | | | | | 0 | 16 | 0 | 16 |
| Maharashtra | 13 | 13 | 0 | 26 | 0 | 34 | 1 | 35 |
| Orissa | 0 | 11 | 2 | 13 | 0 | 27 | 3 | 30 |
| Punjab | 1 | 11 | 0 | 12 | 0 | 15 | 2 | 17 |
| Rajasthan | 1 | 25 | 0 | 26 | 1 | 31 | 0 | 32 |
| Tamil Nadu | 0 | 16 | 0 | 16 | 0 | 0 | 30 | 30 |
| Uttar Pradesh | 20 | 35 | 1 | 56 | 0 | 37 | 33 | 70 |
| Uttarnchal | | | | | 0 | 13 | 0 | 13 |
| W. Bengal | 9 | 7 | 0 | 16 | 0 | 12 | 6 | 18 |
| A&N Island | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| Arunachal Pradesh | 5 | 0 | 0 | 5 | 1 | 8 | 3 | 12 |
| Himachal Pradesh | 7 | 3 | 0 | 10 | 1 | 9 | 0 | 10 |
| Manipur | 1 | 3 | 2 | 6 | 0 | 0 | 5 | 5 |
| Meghalaya | 5 | 0 | 0 | 5 | 0 | 3 | 4 | 7 |
| Mizoram | 3 | 0 | 0 | 3 | 0 | 7 | 0 | 7 |
| Nagaland | 5 | 1 | 0 | 6 | 0 | 2 | 6 | 8 |
| Pondicherry | 1 | 3 | 0 | 4 | 0 | 4 | 0 | 4 |
| Sikkim | 1 | 2 | 1 | 4 | 1 | 2 | 1 | 4 |
| Goa | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 2 |
| Daman Diu | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 2 |
| Assam | NA | NA | NA | 0 | 0 | 7 | 16 | 23 |
| Tripura | NA | NA | NA | 0 | 0 | 3 | 1 | 4 |
| Delhi | NA | NA | NA | 0 | 0 | 9 | 0 | 9 |
| Chandigarh | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| DN Haveli | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| Lakshadweep | NA | NA | NA | 0 | 0 | 1 | 0 | 1 |
| All INDIA N | 102 | 260 | 23 | 385 | 9 | 415 | 159 | 583 |
| % | 26.49 | 67.53 | 5.97 | 100 | 1.54 | 71.18 | 27.27 | 100.00 |

2 from Manipur and one from Himachal Pradesh. All districts from Karnataka, Arunachal Pradesh, Meghalaya and Mizoram belonged to LPD group in 1981. Of the 262 medium prevalence districts in 1981, 39 were from undivided Madhya Pradesh, 28 from undivided Uttar Pradesh and 26 each from Rajasthan and undivided Bihar. All the districts from Gujarat, Rajasthan and Tamil Nadu belonged to MPD in 1981. Of the 18 HPD districts in 1981, 7 were from Andhra Pradesh, 4 from undivided Madhya Pradesh, 3 from Orissa, 2 from Manipur and one from undivided Uttar Pradesh. The analysis reveals that more districts in the state have come in this group in 2001 and also many districts from other parts of the country have entered in the HPD group.

Spatial Patterns of Permanent Childlessness

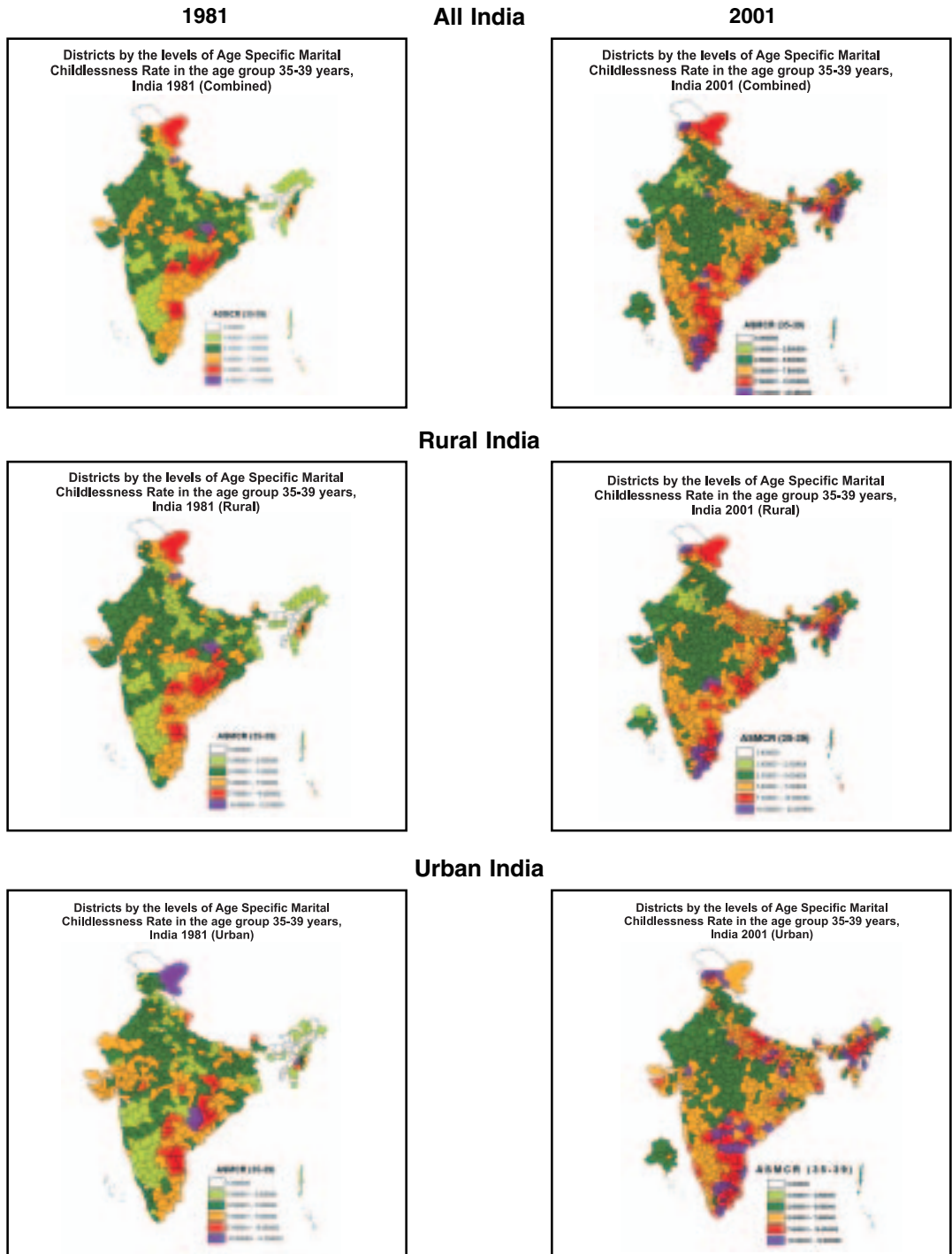
The main purpose of the analysis here is to highlight geographical variations in the levels of childlessness at the district level and also to understand whether there is any spatial pattern with respect to the prevalence of childlessness between 1981 and 2001, and if it is then whether it has any pattern in terms of topography of the area. It is thus intended to understand if levels of childlessness are higher around the coastal line or in the plane areas or if they are more in southern region or other region - north, west or east. This would help us understand whether women living in a particular geographical condition experiences varied chances of childlessness. For the analysis GIS software is used. Based on the levels of childlessness, the districts of India are grouped in to six categories as below:

| <u>Category</u> | <u>Level of childlessness (% of childless women)</u> |
|-----------------|---|
| I | 0.00 per cent (also includes districts for which data is not available) |
| II | 0.01 – 2.50 percent |
| III | 2.51 – 5.00 percent |
| IV | 5.01 – 7.50 percent |
| V | 7.51 – 10.00 percent |
| VI | More than 10.00 percent |

In Figure 4 we have provided maps of India depicting district scenario of the prevalence of permanent childlessness for 1981 and 2001 separately for rural and urban residence. This is useful as analyzing simple distribution of the units (as done above) does not allow us to understand spatial patterns. Plotting the units helps understand the spatial pattern more effectively. It may be pointed out to readers that for 2001, the informational levels of childlessness for the districts of Delhi are shown separately at the bottom left of the map.

One can clearly see a spatial pattern as far as the levels of permanent childlessness in India is concerned. It may be seen that irrespective of time and place of residence, coastal areas of the country tend to have higher levels of childlessness as most of the districts along the coastal line fall group depicted with red or purple colors (more so on the eastern coast). Further, levels of childlessness seem to be high in southern states as well as north eastern states of the country as compared to other regions. In contrast, northern as well as

Figure 4: Spatial patterns of permanent childlessness, 1981 and 2001



western districts reveal relatively lower levels of childlessness. Another important finding emerging from the comparison between 1981 and 2001 map is that over time, districts have moved from lower levels to higher levels of childlessness. The upward shift seems more intense in southern region compared to other regions where number of districts which fell in category-II (0.01 to 2.50%) in 1981 moved to category-III (5.01 to 7.50%) in 2001. Also many districts in southern region have moved from categories-III and IV in 1981 to category -VI in 2001. Also some of the districts in north-eastern regions have moved from category-III to category-V over 1981-2001.

Discussions and Concluding Remarks

The study has clearly brought out various dimensions of childlessness at the national, state and district level. As seen in the analysis, in comparison to other countries the level of childlessness in India seems to be moderate. The analysis reveals that over 6 percent of women in India remained childless in 2001 and the level was even higher in the urban areas at over 7 percent. The analysis suggests that there prevail considerable differentials in childlessness, both at the national and sub-national level of the country, as well as by rural and urban status. The analysis of the data at the state level indicates that the southern states seem to report higher levels of childlessness compared to northern states. For example, of the four southern states, two states (Andhra Pradesh and Tamil Nadu) have exhibited considerably higher levels of permanent childlessness in 2001 (ranging between 9-11 percent). In contrast, some northern states, where fertility levels continue to be high (Rajasthan and Madhya Pradesh), have shown lower levels of permanent childlessness (4 percent or less). Further, urban areas have indicated higher levels of permanent childlessness not only at the national level but also at the state levels.

In addition to the differences by state and place of residence, the data indicates prevalence of wide differences in the levels of permanent childlessness among women by their religion, caste and educational attainment. On the whole, Christian and Muslim women and the Scheduled Tribe women have exhibited relatively higher levels of permanent childlessness as compared to their respective counterparts. For example, levels of permanent childlessness were usually higher for Christian women compared to that of Hindu women, both at the national level as well as at the sub-national level. Likewise, the levels of permanent childlessness were generally high among Schedule Tribe women and Non-SC/ST women, as compared to the Schedule Caste women. In case of educational status of the childless women, the analysis suggests that non-literate women were far more disadvantages when compared with the women who have had some level of education; specifically compared to those who have had 15 or more years of schooling.

The district level analysis indicates that the proportion of the districts falling in the high childlessness category has increased from less than 5 percent in 1981 to nearly 22 percent

in 2001. In other words, more than 7.5 percent of the ever married women aged 35-39 years reported themselves as childless in 2001 in over one in every five districts in the country. Conversely, the proportion of districts with low levels of permanent childlessness have declined dramatically from nearly 29 percent in 1981 to just 3 percent in 2001. Interestingly, in 2001, the share of high childlessness prevalence districts was over one-quarter in urban areas compared to about 20 percent in the rural areas, while there were only about 5 percent of the districts in rural areas with low levels of permanent childlessness compared to less than 2 percent in the urban areas.

The mapping of childlessness rates at the district level reveals spatial patterns in the prevalence of childlessness in the country suggesting that group of districts in a geographical proximity where the rates are higher. The districts in southern regions of the country and those located on the eastern coast of the country apparently have higher levels of childlessness while northern districts and those located on the western coast have lower levels.

The analysis clearly brings out various dimensions of childlessness in India, at the national and sub-national level. This study highlights the need for greater attention from all stakeholders, policy makers, programmers and researchers to takes up the issues related with childlessness into various programs and research activities.

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International Institute for Population Sciences

International Institute for Population Sciences was established in 1956 by the UN, Government of India and the Sir Dorabji Tata Trust as a premier Institute for training and research in Population Studies for developing countries in the Asia and Pacific Region. It is the training centre for population studies for the ESCAP Region, recognised by the United Nations Fund for Population Activities (UNFPA). Now the institute is an autonomous institution under the administrative control of the Ministry of Health and Family Welfare, Government of India. It offers regular academic courses, at graduate and post graduate level; conducts research and training programmes; and provides consultancy to Government and Non-governmental organisations. The Institute was awarded deemed university status in 1985 and since then the PhD programme also initiated at the institute.

Besides teaching regular courses, the Institute has from time to time, conduct short-term courses for various organizations covering various themes and issues. The courses have been sponsored by the WHO, Department of Family Welfare, Asian Development Bank, Nordic center, John Hopkins University and so on. The University Grants Commission sponsored refresher courses have also been organized at IIPS.

The Institute conducts research using its own resources and through external funding. The externally funded projects are usually initiated at the request of the concerned agencies. These are generally large-scale surveys, requiring primary data collection. It is worth mentioning that all the three rounds of nationwide DHS surveys of India - National Family Health Surveys I, II & III- were conducted by the Institute at the request of Government of India with the financial assistance of USAID and UNICEF and the technical assistance provided by ORC Macro and the East-West Centre, USA. Another major project undertaken by the Institute is the District Level Household and Facility Survey (DLHS - RCH), conducted at the behest of Ministry of Health and Family Welfare with World Bank funding. Currently the Institute has been appointed as the nodal agency for the Concurrent Evaluation of National Rural Health Mission (NRHM) for all the states of India.

Prof. F. Ram
Director & Senior Professor

Policy Implications

- The increase in childlessness is largely clustered in areas with high share of under-privileged population of scheduled castes and tribes having poor health outcomes.
- The higher and increasing levels of childlessness in the country call for an urgent need for greater attention from all the quarters including government, planners and policy makers, researchers and public health experts. There is a need to consider provision of required services in the public health facilities at least at the district level to begin with.
- There is also need to undertake area specific research to understand various dimensions of this issue, as the levels of childlessness vary considerably from one area to another and are unacceptably high in few areas.

Vision "To position IIPS as a premier teaching and research institution in population sciences responsive to emerging national and global needs based on values of inclusion, sensitivity and rights protection."

Mission "The Institute will strive to be a centre of excellence on population, health and development issues through high quality education, teaching and research. This will be achieved by (a) creating competent professionals, (b) generating and disseminating scientific knowledge and evidence, (c) collaboration and exchange of knowledge, and (d) advocacy and awareness."