

# POPULATION GEOGRAPHY

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## MIGRANT EXPERIENCES IN AUSTRALIA : THREE GROUPS OF INDIANS COMPARED

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### Abstract

This paper highlights the different migration histories of three groups of Indian migrants in Australia. It is argued that the pre-migration situation and migration patterns are crucial factors that influence the economic and social characteristics of the migrants in Australia. The paper is based on ongoing fieldwork, including formal interviews, observations and discussions, with Indian migrants in Sydney. Punjabi, Kannadiga and Indo-Fijian migrants are compared and their cultural changes, social activities and economic success are analysed in the light of their particular migration histories to Australia.

### Introduction

Though a few Indians have been in Australia almost as long as the first settlers from Europe, large scale migration from the subcontinent to the land down under, has been a phenomenon of the last three decades since the abolition of the White Australia policy opened the doors for non-European migrants. In the 1990s, about 3,000 India-born persons made Australia their new home each year and India has become the fifth most important source country for migration to Australia.

For the purpose of my research, "Indian" is defined as someone who has ancestors with origin in India, that means the person or his or her ancestors have emigrated from British India before partition in 1947 or from the Republic of India thereafter. This includes direct migrants who came directly from India and twice or

thrice migrants who came from other diaspora settlements by undertaking a second or third migration to Australia as well as the Australia-born children of these migrants. No statistics are available for Indians as defined here. In Australia, population and migration statistics are kept on the basis of country of birth. Thus, data are available for India-born persons (see figure 1) who are only approximately half of the Indian population as defined above. Indo-Fijians, for example, are listed as Fiji-born persons. Cross-calculations of birthplace with religions and languages spoken at home reveal that more than 100,000 people of Indian origin lived in Australia in 1991 (Awasthi and Chandra, 1994, p. 397). By now, this number has increased to at least 150,000, almost a third of whom live in Sydney. Around 50,000 Indians in Australia are twice migrants, two thirds of them from Fiji.

In this article, a brief history of Indian migration to Australia will be followed by a comparison of the adaptation and success of three sub-groups of Indian migrants. Punjabis, Kannadigas and Indo-Fijians were chosen for this comparative approach because their migration history and settlement characteristics are very different. The results are based on multi-locale fieldwork currently in three countries carried out as part of a Ph.D. research project and include interviews with individuals and key persons and the gathering of official information in Australia (Sydney and Woolgoolga), India and Fiji (Map 1). Sydney, which is Australia's major global city and attracts most Australiabound migrants, was the major site for fieldwork. As part of the ongoing research in Sydney, formal interviews with 17 Indo-Fijians (nine Hindus, five Muslims, two Christians, one without religion), 14 Punjabis (12 Sikhs, two Hindus), eight Kannadigas (all Hindus) and of 20 other Indians have so far been analysed. In addition, informal conversations were conducted with a larger number of Indian migrants. It will become evident that the three subgroups of Indian migrants in Australia arrived at different points in history, had different reasons to settle in Australia and once there, they display very different patterns of cultural practices as well as of economic activity and success.

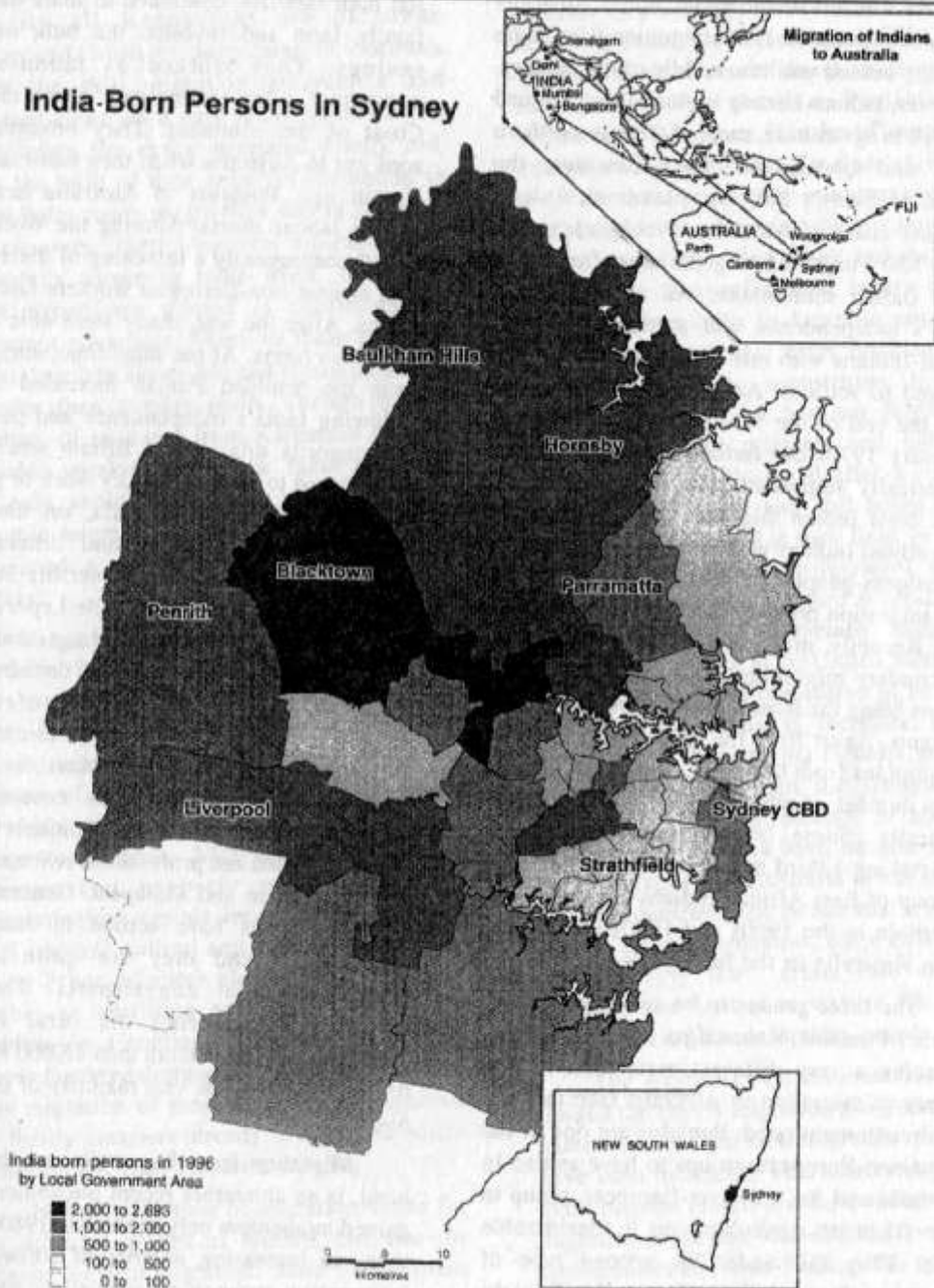
## 1. History of Indian migration to Australia

Substantial emigration from the Indian subcontinent is largely a phenomenon that started in the first half of the 19th century. Various types of migration have led to a situation where Indians today are living in all corners of the globe. The first type of migration was that of indentured labourers who were transported by the British colonial state to various parts of the empire to work on plantations after slavery had been abolished (Clarke *et al.*, 1990, p. 8). The scheme was in place between 1834 and 1920 and the presence

of Indians in the Caribbean, Fiji, South Africa and Mauritius among other places are the result of indentured migration. Fiji saw the arrival of some 60,000 indentured labourers from India, some 40,000 of whom decided to make Fiji their permanent home after the end of their contract. These workers were joined by Indians who migrated independently to the colonies and usually worked as traders or administrators and who constitute the second type of migration called free or passenger migration (Clarke *et al.*, 1990, p. 8). In Fiji, most free migrant traders came from the state of Gujarat. A third type of emigration from India started after 1945 and involved the migration of manual workers, professionals and business-people; to Western countries (Clarke *et al.*, 1990, p. 8) and later to the Middle East. Finally another type of migration came with political independence of the former British colonies. Indians in countries like Fiji found themselves as unwelcome residues of colonialism and discriminated against. Some of these Indians therefore undertook a secondary migration to Western countries.

In the case of Australia, the majority of Indian migrants is of the third and fourth type of migration though some Indians had arrived as migrants of the first two types. Before 1860, a small number of convict and recruited labourers as well as very few free migrants had come from India. Arrivals from Punjab increased between 1861 and 1900. Most of them worked in agriculture or as hawkers and peddlers. Between two and four thousand came as drivers from the Northwest Province and the Punjab also came to Australia in the second half of the 19th century (Omar and Allen, 1996, pp. 9-10). Towards the turn of the century, Punjabis working as fruit pickers and cane cutters became an increasingly common sight along the eastern coast of Australia. It is estimated that some 7,000 India-born persons lived in Australia at the beginning of the 20th century (BIMPR, 1995, p. 3; see figure 1).

### India-Born Persons in Sydney



Map 1

As a result of the racist White Australia policy introduced in 1901, migration from India virtually ceased until the middle of the century. However, Indians already in Australia continued to work in agriculture, most of them in northern NSW and Queensland. They constitute the origin of today's Punjabi communities along the east coast of Australia, Woolgoolga with some 800 Punjabis being the most famous of these Indian settlements (see map 1). After India's independence and partition in 1947, Anglo-Indians with one European parent were allowed to settle in Australia. However, only with the end of the White Australia policy in the early 1970s did Indian migration become numerically important (see figure 1). Since then, most Indian migrants to Australia have been ethnic Indians who work as professionals or business-people and have arrived under the skill migration programme (BIMPR, 1995, pp. 4-5). Recently, many Indians have undertaken a secondary migration to Australia with Indo-Fijians being the most numerous group of twice migrants. Apart from the twice migrants from Fiji, Indians from Malaysia, Singapore, Britain and a number of other countries have come to Australia. Some Indians have arrived by undertaking a third migration. One example is a group of East African Indians who migrated to Britain in the 1960s and 1970s and moved on to Australia in the late 1980s.

The three groups to be compared in this article - Punjabis, Kannadigas and Indo-Fijians - display a very different motivation to and history of migration to Australia (see map 1). As already mentioned, Punjabis are one of the oldest non-European groups to have settled in Australia and the only non-European group to have taken up agriculture on a considerable scale. They fall under the second type of migration from India. The early Punjabi migrants did not undertake a permanent migration but were leading a commuter life between Australia and Punjab where they had

left their families, continued to share the joint family farm and invested the bulk of their savings. They worked as labourers in agriculture, often cutting cane along the East Coast of the continent. They brought their sons out to Australia when they had reached a certain age. Punjabis in Australia benefited from a labour shortage during the World War II and consequently a lessening of discrimination against non-European workers and rising wages. After the war, many were able to buy their own farms. At the same time, emigration from the troubled Punjab increased rapidly following India's independence and partition. The majority migrated to Britain where they were forced to take up factory work or go into small business. "In Australia, on the other hand, land was plentiful and illiteracy no insuperable barrier to farm ownership for those who managed to settle here." (de Lepervanche, 1984, p. 141) Apart from this long-established Sikh community, the last two decades have witnessed the migration of professional Punjabis who entered Australia under the skill migration programme rather than the family reunification programme. An economically important subgroup of urban Punjabis are the highly qualified and professional twice migrants from Singapore and Malaysia. Generally, the recent migrants have settled in Australia's major cities and they are quite distinct from their rural counterparts. They are already outnumbering the rural Punjabi communities. Today more than 15,000 Punjabis live in Australia, the vast majority of them are Sikhs.

Migration from Karnataka, on the other hand, is an altogether recent phenomenon that gained momentum only in the late 1980s. Since then, an increasing number of software and information technology specialists and other professionals have left India's "Silicon Valley", Bangalore, for a more lucrative job in Australia. A few have come from Karnataka's second

city Mysore. In contrast to Punjabi migrants, virtually all Kannadigas are of urban background. Most of them came to Australia under the skill migration programme and migrated alone or in core family units instead of bringing the entire extended family out. With the bulk of their relatives remaining in South India, many regard their stay in Australia as temporary. Their long-term aspirations are towards a career in India itself, for which work experience abroad is considered an important advantage. Many of these migrants are in their late 20s or 30s and return migration is more than a mere myth. Though overall numbers of migrants from Karnataka (mostly Kannada speakers and a few Tamil speakers) are only about 2,000, it is a growing and dynamic migrant community that has already developed a strong group consciousness in Sydney.

Large-scale Indo-Fijian migration to Australia is likewise a recent phenomenon, which started in 1987 when democratic elections in Fiji for the first time brought a Government to power which contained a majority of Indo-Fijians and two military coups were staged to restore political control of indigenous Fijians. Violence against Indian persons and property was widespread. Discrimination against Indo-Fijians has since been institutionalized and even the first Indo-Fijian Prime Minister elected in 1999 seems unable or unwilling to entirely remove it, resulting in a continuous stream of emigrants whose favoured destination country is Australia. The migration of most Indo-Fijian sponsored by family members already in Australia where some 35,000 Indo-Fijians are living.

Not only the time of migration varies for the different groups of Indians, but also the reasons for their migration. Most Indo-Fijians left Fiji for a combination of political and economic reasons. Political discrimination of course meant that economic opportunities for

Indo-Fijians in Fiji have also been restricted. Because of proximity, Australia has been their favourite country of resettlement. My survey shows that most recent direct migrants from India - Kannadigas as well as Punjabis - took the decision to migrate in order to improve the educational opportunities for their children as well as their own job opportunities. For professionals, in particular, competition on the labour market in India is high and the rate of progress up the professional ladder is slow. Migration from India to Australia can thus be a means to keep their class position in the context of growing competition in India. Nonetheless, Australia has not fulfilled the hopes of all these migrants and some have become rather disillusioned after a couple of years in the country and still being without permanent employment in their field. In contrast again to Indo-Fijians, professional migrants from India do often not regard Australia as the preferred country for resettlement. Many dream of ultimately settling in the United States where job opportunities are considered to be the best in the world. Australia is, therefore, a second choice: better than staying in India and easier to get a visa for than the United States. Although, a growing number of Indians in Australia and in India have become aware of the advantages that Australia offers compared to other countries. The factors that are stressed include the low population, clean environment, comparatively low crime rate and more generally the Australian way of life and the friendliness of the Australian people.

The Australian Government has recently limited the family migration programme, while numbers under the skill migration programme have been increased. This affects in particular those migrant groups that have relied on family migration in the past including the rural Punjabi communities and Indo-Fijians. The numbers of rural Punjabis, however, had already remained stagnant for a while, not only because the sponsorship has become more difficult, but

also because some extended families have already completely relocated in Australia with no close relatives remaining in the Punjab.

## 2. The settlement process in Australia

The major argument in this chapter is that social life and culture are very diverse within the Indian population in Australia and that the reason for this can be found in the migration history of the particular group. When looking at the different groups, it is necessary to have the specific Australian setting in mind. It is impossible to understand migrant settlement and culture without referring to the framework of Australian multiculturalism. This contains the freedom to practise acceptable parts of migrant culture and tradition - acceptable as defined by the dominant culture - and thus refers mainly to the folk cultural domain, including dance, dress, food and language. It has failed to provide equal chances in political and economic terms (Collins, 1988, p. 239). Ethnic instead of class differences are emphasized and migrants are expected to establish community or ethnic societies that act as links between the migrant population and the Australian state and that receive funding and other support from the state. While Indians have formed organisations in most countries of their diaspora, the Australian setting is particularly conducive. The number of Indian societies in Sydney speaks for itself: there are some 90 of them including cultural and language-based societies, various religious groups, caste-based, student, Indo-Fijian and various other societies.<sup>2</sup> The three subgroups of Indian migrants that are dealt with here have established a number of societies, for example, the Kannada Sangam, the Australian Punjabi Association or the Fiji Indian Social and Cultural Association of Australia. Many Indian societies are very active and organise several major functions each year. In a typical month at least 20 Indian functions are organised in Sydney. These include concerts, dance performances, fashion shows, religious lectures

and the screening of Hindi movies. Though they are open to the public, most functions are attended only by members of the particular society which is organising the event.

In regards to society membership, it is striking that all interviewees from Karnataka had joined a society, mostly the Kannada Sangam. On the contrary, only five of the 14 Punjabis and 9 of the 17 Indo-Fijians were member of an Indian society. This difference is an expression of different social circumstances and networks in Australia which affect the cultural and social activities in various ways. One important factor in this regard is the presence or absence of family members in Australia. None of the migrants from Karnataka had any brothers, sisters or parents permanently settled in Australia. They live in core family units with their spouses and children and therefore are reliant on membership in formal societies if they wish to keep their culture alive. Punjabis and Indo-Fijians on the other hand tend to have more extensive family networks in Australia. This gives them a chance to practice their culture more informally without relying on membership in societies. Most Indo-Fijian interviewees even have the bulk of their relatives in Australia. Another important factor is whether migrants regard their stay in Australia as permanent or temporary and how this question affects their future plans. In this respect, the three groups display quite different characteristics. Since it takes only two years of permanent residence in Australia to become eligible for citizenship, all but four of the interviewees would have been eligible. However, only 2 Kannadigas (25%) had actually become Australian citizens compared to seven Punjabis (50%) and 15 Indo-Fijians (88%). Though this does partly reflect the different length of stay in Australia, it is more importantly an expression of commitment to the country and plans for the future. Only 50% of the interviewees from Karnataka were planning to stay in Australia,

compared to 60% of Punjabis and over 90% of Indo-Fijians. The other half of Kannadigas contemplates migrating back to India whereas many Punjabis would rather move on to another diaspora settlement. Indo-Fijians have no intention to leave Australia once they are settled here. Whether a migrant considers his or her stay in Australia as permanent or temporary thus has considerable implications for the social life, and even the residential pattern is influenced by it.

Generally speaking, consecutive censuses have revealed that Indian migrants are scattered throughout Sydney's middle and upper class suburbs and that there are only a few clusters of India-born residents.

Within this general residential pattern, there are differences between the groups considered in this paper: one striking feature is that Kannadigas are more concentrated in one area than Punjabis and Indo-Fijians. Many migrants from Karnataka live in just one suburb which is Liverpool. There is one street in Liverpool in the vicinity of which some 80 families from Bangalore have settled. This street is probably the major spatial concentration of India-born migrants in the whole of Sydney and is largely made up of Kannadigas. Nonetheless, it would be wrong to speak of a "little Bangalore" because it is a purely residential area. As a suburban centre, Liverpool does boast a considerable number of Indian businesses (spice-shops, fashion shops, travel agencies) but these are largely in the hands of Indo-Fijians who only partly live there. Most Kannadigas in Liverpool live in rented flats which, like elsewhere in Sydney's Western suburbs, are relatively affordable. Since most Kannadigas have found employment in the professional sector and often have two incomes per household, renting a low priced flat in Liverpool, despite the area's not so good reputation is a matter of choice, not of necessity. This choice is partly due to the desire of living close to other people of the

same background. On the other hand it also reflects the propensity to save for the future and use these savings for other than an improved standard of living in Australia. Other migrants from India tend to follow the Australian model of getting a mortgage and their own house as soon as possible. The fact that many Kannadigas do not do this, thus reflects the idea of many that the stay in Australia is only temporary. Some better-off and more established migrants from Karnataka live in Strathfield which does not belong to the list of major Indian residential areas (see map 2). Many well settled Punjabis live in Sydney's more expensive northern suburbs (including Hornsby and Baulkham Hills) whereas recent migrants from Punjab are found in the Western suburbs (including Blacktown, Penrith and Parramatta) where they usually own a house (see map 2). The settlement in the west seems not to be motivated by a desire to minimize expenses but these are the only areas where many new migrants can afford to buy the first home. After some more years in the country, they might shift to more expensive suburbs. Their stay in the western suburbs thus reflects a commitment to a life in Australia, the standard of which as they hope will gradually increase. Many Indo-Fijians follow the Punjabi pattern in that they are homeowners and many live in the western suburbs.

The differences in outlook that have been described are reflected in different cultural activities with reference to the country of origin as well as the country of settlement. As to the former, all India-born migrants keep close contacts to family members in India. As Helweg (1991, p. 23) argued, "Modern communications enable emigrants to maintain close contacts with their community of origin. The contact can be so close that overseas Indians can be involved in the local affairs on the other side of the globe as if they were actually residing in the region." This seems to hold for both Punjabis and Kannadigas who retain close links



and obligations across the Indian Ocean. The median number of phonecalls to India in the month preceding the interview was three for Kannadigas and four for Punjabis. Migrants are involved in a whole range of transnational activities the analysis of which is beyond the scope of this paper. However, it should be noted that as a side effect of retaining close contacts and remaining part of social networks in India they also keep open the possibility for an eventual return to the subcontinent. The case is a little different for Indo-Fijians. Many of them likewise retain contacts to Fiji-not to India-though many interviewees did not have very close relatives in Fiji and therefore contacts were on a less frequent basis. In the month preceding the interview, more than half of the Indo-Fijians had not made a single phone-call to Fiji.

Migrants from India keep their culture alive and try not to deviate too much from the norms prevalent in India. Kannadigas seem to be more conscious about this than Punjabis, which might reflect a general difference between Hindus and Sikhs. Hinduism is deeply dependent on the Indian soil with its holy rivers and shrines. Leaving this land behind can produce a feeling of guilt in the mind of Hindus abroad, and this is sometimes compensated by an even deeper involvement in Indian cultural and religious activities. All Kannadigas, for example, listen to radio programmes in an Indian language and all but one interviewee meets Indian friends at least once a week. On comparison, only five of the 14 Punjabis listen to Indian radio programmes and only seven meet Indian friends on a weekly basis. For Sikhs, migration has almost become part of their culture and has long been a legitimate strategy for economic improvement if not an outright necessity, and is therefore nothing to be ashamed of. In fact, the history of Punjabi and Sikh emigration has proven that a distinct identity can be maintained even

in distant lands and that migration does not necessarily mean a loss of culture. Kannadigas who are predominantly first generation migrants can neither look back to a tradition of emigration from their state nor to a global diaspora that could serve as a similar role model.

Surely, most Indian parents share the concern that their children will become too "Westernised" and lose their Indian culture. This is the main reason why some of the young migrant families from Karnataka have sent their children permanently to Karnataka to be cared for and raised by the grandparents or some other member of the extended family. The fact that they thereby deprive their children of the opportunity to become truly bi-lingual and bi-cultural can only be understood when one takes into account that they probably regard their stay in Australia as temporary. No Punjabi family that I have met had followed this pattern.

Looking at the culture and social life of Indo-Fijians, one is presented with an altogether different picture. While culturally they still identify with their Indian heritage, it is not so much the concrete place India but rather a more abstract notion of what is Indian. There is a lot of ambivalence about their culture. On the one hand they are described as conservative by some India-born migrants, which of course is a result from the fact that their culture originated in 19th century India and has been spatially separated ever since, thus being only marginally affected by developments in the subcontinent when they were brought to Fiji. On the other hand, they seem to be more open to Western influences than India-direct migrants. From among the three groups considered in this study, Indo-Fijians find it easiest to fit into and seem most comfortable in Australian society. They being secondary migrants is important in this regard. They had already made a home outside of India until the

coups in Fiji disrupted their lives and they have arrived in Australia with the awareness and skill of arranging a permanent home in yet another place. These differences between direct and twice migrants are among a number of reasons why Indo-Fijians are not fully accepted as "Indian" by the India-born migrants. There is little informal contact or common social activities between the groups, but then again, Kannadigas and Punjabis do rarely spend their free time in Sydney together either.

### 3. Economic activities and success

Moving on from social and cultural activities, the employment situation is another area which is for several reasons dependent on the pre-migration and migration experiences. As such, the noticeable differences between the three groups of Indian migrants which are dealt with in this chapter can be traced back to their particular migration history.

In general, migrants from India are highly qualified and are over-represented in professional occupations. In 1991, 22% of India-born migrants aged 15 and over were professionals compared to 12% of the total population (BIMPR, 1995, 26). The 1991 census also revealed that 32% of the Hindu population and 24% of the Sikh population in Australia had at least a Bachelors degree (Bilimoria, 1996, pp. 64-5). My interviews in Sydney have likewise indicated these high qualifications. All eight Kannadigas were university educated (three had an undergraduate diploma, two a Bachelor, two a Masters and one a Ph.D. degree). Most of the recent Punjabi migrants were also university educated (five Bachelor, one postgraduate diploma, one Masters and five Ph.D. degrees) though two of the interviewees had no formal qualifications at all. In contrast, Punjabis in the farming community of Woolgoolga are predominantly without any formal qualifications (two thirds

of the interviewees had no formal qualifications). Indo-Fijians are in an intermediate position: six had no formal qualifications, seven were university educated and four had vocational training.

These different qualification levels are reflected in the migration history to Australia. Recent migrants from both Punjab and Karnataka are granted residence visa on the basis of their qualifications. Formally, uneducated people are basically excluded from the possibility of settling in Australia unless they are sponsored as family migrants - an option that was used extensively by Indo-Fijians and the old farming Punjabi communities at least before the recent changes in the immigration legislation took effect. It goes without saying that different levels of qualifications translate into different occupational profiles for the three groups. In my survey, the migrants from Karnataka were the most highly qualified and came from a region in India that is home to a large sector of modern industries which are globally competitive. Many recent migrants from Bangalore had worked in a multinational company and thus do not only have the qualifications but also the work experience that is relevant in the Australian labour market. Most of them have therefore found employment in the professional sector even though some had to start with a lower position than they had held before migration.

Recent Punjabi migrants are not quite as successful as Kannadigas. Five of the 14 interviewees were working as train-guards or taxi drivers even though four of them were tertiary educated. The reason being that many have research degrees, (often doctoral) in agriculture or some related discipline which were useful in Punjab with its agriculture-based economy but which are not of great use in Sydney. This has led to a situation where

some former lecturers from the renowned Punjab Agricultural University in Ludhiana are earning their living as taxi-drivers. A taxi stand in Sydney's Western suburb of Blacktown is therefore informally known as the "Ph.D. taxi stand". This situation should not disguise the fact that there are many recent migrants from Punjab that have found employment as managers, engineers, teachers and lecturers. Punjabi twice migrants from Malaysia and Singapore are particularly successful in the labour market.

Most Kannadigas and Punjabis are employees rather than business-owners. there were only two Punjabis and one Kannadiga among the interviewees that had established their own business. Indo-Fijians display a different pattern: nine of the 17 interviewees were either self-employed or employers. Seven had a typically Indian small business such as a spice-shop, fashion shop or video library. In fact, if not for anything else, Indo-Fijians are commended by the India direct migrants for operating these businesses which give all migrants of Indian origin the chance to buy the necessary food ingredients or borrow Hindi movies without travelling from one end of town to the other. There are as many as 200 shops selling typically Indian goods in Sydney. Before the large influx of Indo-Fijians starting in 1987, the number of shops was a mere fraction of today's number and observers of the situation tell about a wave of openings of new shops since 1987 which over the years has slowed but not ended altogether. Many other Indo-Fijians work as trades persons or clerks though there are a few professionals among them as well.

To sum up, migration legislation in Australia favours skilled migrants with high qualifications and this is clearly reflected in the recent migrant groups from Punjab and Karnataka. Punjabis have had some problems

finding employment in their field of qualifications and some are forced to do work for which they are overqualified. This waste of human resources indicates one of a number of flaws in Australia's immigration programme. Many Indo-Fijians on the other hand who came as family migrants tend to have fewer formal qualifications. Many have established their own businesses.

#### 4. Conclusion

Indians were one of the earliest non-European migrant groups which settled in Australia. Most early migrants came from the Punjab. After the end of the White Australia Policy in the early 1970s, migrant numbers from India increased substantially and this has led to a diversification of Indian migrants. Indians from a wide range of backgrounds and regional origins have settled in Australia and sub-communities have been formed whenever their numbers reached a certain level. Punjabis, Kannadigas and Indo-Fijians are three of these groups and were chosen for this study to show the diversity that exists within the Indian population in Australia. It has been argued that different experiences and success in Australia are a factor of the migration history of the particular group.

Punjabis are the oldest group of Indian migrants and have in the past settled along the Eastern Coast of Australia and engaged in farming. In recent decades, professional migrants from Punjab have complemented these previous migrants. The two groups have interacted in various ways and it is of the importance here that the more recent migrants have in a way had a model showing them that it is possible to live in a Western country and yet retain a separate identity and lifestyle. This has boosted their confidence and made them more open to Australian society compared to the recent migrants from Karnataka. In the

labour market, professionals from Punjab encounter some difficulties to find appropriate employment and some are forced to do unqualified work. Compared to the more successful Kannadigas, this might have to do with Punjab's largely agriculture-based economy. Many Punjabi professionals are trained in fields that are not relevant in the Australian labour market. Another possible explanation is that Punjabis encounter discrimination in the labour market. Much discrimination in Australia is based on language and as a matter of fact the level of English language skills is generally higher among South Indian migrants compared to North Indians. Moreover, turban-wearing Sikhs in particular are a rather visible minority.

In contrast, migrants from Karnataka, most of whom have come directly from Bangalore, have left an economically dynamic region of India and often arrive with skills and experience in fields that are useful in the Australian labour market. While economically

they are successful and well integrated, they tend to keep a greater social distance. Many live in one particular area of Sydney and the fear of Westernization is partly so large that the children are permanently sent back to India.

The third group considered here are Indo-Fijians who arrived largely after the military coups in Fiji in 1987. Being secondary migrants, they are accustomed to living in a different environment and are open to outside influences. They generally have less formal qualifications than India direct migrants, yet most of them are successful in finding a job in their trade. Many have established small businesses that cater for the needs of all Indians in Sydney.

Summing up, different migrant groups that tend to be subsumed under the broad category of the Indian diaspora display very diverse social and economic patterns in Australia. These differences can best be explained by different pre-migration and migration experiences.

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<sup>1</sup> A more in-depth analysis of the coups would reveal that the prime motivation was not to exclude Indo-Fijians from power but rather to restore the old order in which an allegiance of Eastern chiefs and business people shared economic and political power which had been threatened by the coups.

<sup>2</sup> This number reflects the actual diversity of the Indian population in Sydney as well as the competition for positions within the societies which leads to frequent break-aways and the formation of ever more organisations.

<sup>3</sup> "Local Government Areas" (LGAs) are the major statistical regions within Sydney. In Map 2, absolute numbers of Indian migrants per LGA are displayed rather than their proportion of the total population. Proportional figures are below 1 % for most of Sydney LGAs and do not give a good idea where Indian migrants have actually settled. Note that the absolute numbers refer to India-born migrants thus excluding Indo-Fijians and Australia-born children. In the 1996 census, 25,445 India-born persons were enumerated in Sydney.

# INDUSTRIAL LOCATION AND EMPLOYMENT IN INDIA

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## Abstract

This paper makes a survey of growth and changes in spatial location of factory industries in the period of nearly half a century - 1950/51 - 1997/98. The Indian economy has been transformed during this period from a primarily agricultural economy in which agriculture contributed more than half of the gross domestic product (GDP) to a diversified economy in which industry and service sectors contribute three-fourth of the GDP while agriculture contributes less than one-fourth.

The transformation has been the result partly of policies and investments by the Government of India and governments of various states and partly to investments by private companies and initiatives of entrepreneurs.

Economic geographers have long debated the relative importance of different factors - advantage of an early start, proximity to mineral and non-mineral raw materials, availability of low cost unskilled and skilled labour, initiative of entrepreneurs, policies of governments and finally proximity to markets in explaining location of factory industries. This paper brings out that proximity to raw materials is in some ways the least important and proximity to markets the most important factor in location of industries.

Further, there is not likely to be a major change in the regional location of factory industries during the next decade. On the other hand states and regions which are industrially advanced could increase their lead over those that are industrially backward.

The three decades 1970's-1990's have seen rapid growth of knowledge based industries such as computer software and other information technology industries. Employment and value added in them has gone up exponentially during the past two decades and is expected to increase rapidly in the foreseeable future. Finally, the industries instead of being concentrated in one city - Bangalore as at present, would spread to several other metropolitan cities, as a result partly of efforts of some state governments which are creating the infrastructure for their development.

## Introduction

The object of this paper is to present the principal facts about distribution by states of employment and value added in factory industries in the mid 1990's and to relate them to the distribution of mineral and non-mineral

resources, the level of economic development in different states and policies relating to industrial development, followed by the state governments. The present structure of the industrial sector and locational pattern of factories are discussed against the background of the transformation of the Indian economy

from a primarily agricultural economy at the beginning of the 1950's to a diversified economy in which industry and service sectors contributed three fourth of the gross domestic product by the mid-1990's.

### Changing Industrial Scenario : 1950's to 1990's

In 1950/51, India was an economy in which agriculture contributed 56 per cent of the gross domestic product while the small industrial sector contributed only 15 per cent (Table 1). The sector comprised besides cottage industries and handicrafts, factories processing tea and jute for export and making a narrow range of consumer goods — textiles of cotton, wool and rayon, sugar, wheat and rice flour, cooking oil, shoes and other leather goods and cement, corrugated iron sheets, etc. for construction.

The traditional handicrafts — weaving of handlooms cloth of cotton, silk or rayon; making of brassware, etc., were also oriented

towards meeting the needs for consumer goods. The basic industries — steel mills, plants manufacturing machinery for mining, generation, transmission and distribution of electricity, manufacture of locomotives, coaches and other equipment for the railways, light and heavy machine tools, vehicles for public, commercial and private transport (trucks, buses, passenger cars, motor bicycles, scooters etc.) were virtually non-existent. By the mid 1990's, however these industries together with petroleum refining, manufacture of petrochemicals, other chemicals, pharmaceuticals and a wide range of consumer durables contributed the bulk of employment and value added in the factory sector. Furthermore the knowledge-based industries such as computer software and other information technology based industries were well established and were experiencing very rapid growth. The contribution of the industrial sector to GDP is estimated to have increased to 30 per cent and of agriculture to have fallen to 25 per cent by 1997/98 (Table 1).

**Table-1**  
**Distribution of GDP by Major Sectors 1950-51 and 1997-98**

Contribution to GDP by Sectors	1950-51	1997-98
Agriculture	55.8	25.3
Industry	15.2	30.1
Services	29.0	44.6

Source : Government of India, *Survey of Industries*, New Delhi, p.1

### Factories and Small Industries : Employment and Values Added

The industrial sector consists of two components :

(i) Factories : Industrial units employing 10 or more workers and using power or

employing 20 or more workers if not using power, and

(ii) Small industries including cottage industries and handicrafts. During 1995-96 the employment and value added figures for the two segments of the sector were the following :

**Table - 1 (a)**  
**Factories and Small Industries : Employment and Value Added**

	Employment (Millions)	Per cent	Value added (Rs. 000 crores)	Gross output (Rs. 000 crores)	Per cent
Factories	10.05	40	139.4	670.5	66
Small Industries	15.30	60	n.a.	356.4	34
Total	25.35	100	—	1026.9	100

*Source* : Government of India, *Survey of Industries*, New Delhi, pp. 89 and 91.

Thus factories provided employment to about 40% of the workers engaged in industries but contributed almost two thirds of the gross output, while small industries provided employment to 60% of the workers but contributed only one third of the output.

### **Industrial Growth and Location of Industries :**

Rapid transformation of the economy began in the late 1950's and continued through the 1970's. Heavy investments were made during this period of about 20 years by the Government of India in establishing five large integrated steel mills; a factory for manufacturing heavy machinery, factories for manufacturing a variety of machine tools and equipment for generation, transmission and distribution of electricity, a factory for making telephone receivers and other telecommunication equipment and factories for manufacture of locomotives and coaches for the railways. Economic and/or technical assistance for establishing the factories was provided principally by the Russians, the British or by other European countries.

After the discovery of large deposits of crude oil off the coast of Mumbai and Gujarat in the late 1950's, large investments were made

by the Government of India in exploration and exploitation of petroleum deposits, establishing petroleum refineries and establishing a network of dealers for distribution of motor spirit, diesel, kerosene and other petroleum products. Private companies including the multinational corporations, that had been distributing petroleum products for decades were also allowed to establish petroleum refineries and expand their distribution networks. The number of petroleum refineries, some of which have involved foreign investment has increased progressively. Indian private investors have made large investments in plants manufacturing a large variety of petrochemicals.

Private entrepreneurs made complementary investments also in steel rolling mills, manufacture of wagons for the railways, steel rods and corrugated iron sheets for construction and establishing pig iron plants for manufacture of castings. Their other major investments were in manufacture of telephone receivers and other telecommunication equipment, food processing and manufacture of drugs.

Manufacture of vehicles for public, commercial and private transport (trucks, buses, passenger cars, motor bicycles, scooters etc.) was also started by private entrepreneurs in



the late 1950's or early 1960's with technical assistance provided by reputed foreign manufacturers. Production of all these as well as of a variety of consumer durables — refrigerators, air conditioners, radio and television receivers, office and hospital furniture, furnishings for home and office — has increased rapidly during the five decades, 1950's-1990's in response to rapid increase in domestic demand.

The computer software for export industry which began in Bangalore in the 1970's, has experienced very rapid growth during the subsequent two decades so that by the late 1990's, the turn-over of the industry is in billions of dollars and the shares of some of the leading

software export companies are considered important enough to be listed on the New York Stock Exchange. According to one estimate, software exports amounted to \$ 2.65 billion in 1998/99, 56 per cent higher than \$ 1.75 billion in 1997/98 and are expected to reach \$ 10 billion within 5 years (Times of India, July 1999).

The value of output of consumer, industrial and other electronics more than doubled during the four years 1993-94 — 1997-98 (Table 2). Such growth is a portent of trends of the foreseeable future; the information technology based industries are poised for very rapid growth during the next decade because

**Table - 2**  
**Electronics Production Profile**  
**Value of output Rs. crores**

	1993-94	1997-98
Consumer electronics	4150	7600
Industrial electronics	1170	3150
Computers	1820	2900
Communication and broad-casting equipment	3150	3250
Strategic Electroics	500	500
Components	2680	4400
<b>TOTAL</b>	<b>14070</b>	<b>82100</b>
Computer Software for Export	1020	6500
Domestic software	695	3470
<b>GRAND TOTAL</b>	<b>15785</b>	<b>32070</b>

*Source* : Government of India, *Survey of Industries*, New Delhi, p. 79.

of development of internet. Furthermore computerisation in Indian industries, banking, finance, public administration and other services is just beginning.

Another noteworthy development which will affect industrial growth in the next decade is entry during the last few years of Korean, American or other multinationals who have established factories manufacturing or assembling from imported kits passenger cars or trucks and a wide range of consumer durables. Their factories are located in the environs of Chennai, Delhi and Bangalore.

It may be mentioned that the environs of the large metropolitan cities especially Mumbai, Delhi, Bangalore, Hyderabad, Pune and Chennai have been the favoured locations for establishment of a number of public and private sector industrial units mentioned above. Excepting the steel mills and the heavy machinery plant, most of the other public sector industrial units have been located in the vicinity of the large cities. The 3 petroleum refineries established by the foreign companies in the 1950's were located in the environs of Mumbai. Many refineries established later have also been located near cities along the west or the east coasts. The problem of pollution of air and water that their location creates for the residents of the cities were completely ignored while deciding on their location.

The green revolution in agriculture, which began in the late 1960's and continued during the next two decades and under which production of cereals - wheat and rice — increased rapidly with use of improved, very high yielding varieties of seed, chemical fertilizers, pesticides and improved manual or power driven implements including improved ploughs, tractors, mechanical threshers and electricity or diesel driven pumps on irrigation wells, has led to growth of large industries manufacturing fertilizers, pesticides, pumps for lifting water, tractors, etc. The agricultural equipment industry is also located in cities closest to the areas affected by the green

revolution. Thus the Punjab-Haryana-Western U.P region in which production of cereals has been increasing rapidly from the late 1960's is served by a factory manufacturing tractors located in a satellite town of Delhi, while Ludhiana, an industrial city in Punjab manufactures a wide range of power driven agricultural implements. Hyderabad, Chennai, Pune and Coimbatore are some of the other important cities manufacturing power driven implements for use in agricultural regions located within their hinterlands in which agricultural output has been increasing rapidly. However, the chemical fertilizer factories are located in Gujarat and near the petroleum refineries in various parts of the country.

Two other developments in the 1960's which affected location of industries profoundly were:-

(i) Flight of capital from the Calcutta Metropolitan District (including both Calcutta and Howrah) due to militancy of trade unions. As a result, some large steel fabricating units which manufactured bridges and other large steel structures for the railways, mining machinery etc., and which were owned by the Government of India were closed. A number of private entrepreneurs also closed their factories in Calcutta or Howrah to re-open them in southern India especially Tamil Nadu or in the western Indian states of Maharashtra and Gujarat.

(ii) Industrial growth in these three states has been encouraged also by the influence that the industrialists based in them have had with the Ministers and officers in the central government responsible for grant of licenses for establishing industrial units and providing them various incentives such as concessional credit from financial institutions, exemption from taxation of profits for the first few years of operation of the units and various facilities for export of products.

There has been no significant returning capital to the Calcutta Metropolitan District despite the fact that the present Communist

party led government of West Bengal, which has been in power for almost 30 years, has kept militancy of trade unions in check. There is no shortage also of electricity or water in the Calcutta Metropolitan District. This shows that while flight of capital from a region can be triggered off by one or more causes, its return is difficult. A further reason for decline of West Bengal as an industrial state is that the elite in the state has always preferred becoming professionals — lawyers, physicians, teachers, scientists, senior executives in large companies owned formerly by the Scots but by Indians after independence to becoming industrial entrepreneurs.

### Distribution of Employment and Value Added by Factories by States

Data on distribution of employment and value added in factories in 1995/96 is given in Table 3. It may be noted that 25 per cent of the

employment but as much as 36% of the value added in factories was accounted for by factories located in the two states of Maharashtra and Gujarat. Maharashtra alone contributed 15 per cent of the employment and 24% of the value added in factories. Tamil Nadu and Andhra Pradesh ranked next to Maharashtra and Gujarat as important industrial states. Together these four states accounted for almost half of both employment and value added in factories. On the other hand, Bihar and West Bengal, which have large deposits of coal, iron ore and other minerals and in which are located 3 integrated steel mills, the heavy machinery plant at Ranchi, the old multi industry complex of Jamshedpur, the post 1960's complex of Durgapur - Assansol besides the industries located in Calcutta and Howrah contributed only 11.5 per cent of the employment and 8.5 per cent of the value added in factories.

**Table - 3**  
**Share of Selected States in Population and Employment and value added in Factories**

Sate	Population (Millions)	Per cent of all India	Employment (000's)	Per cent of all India	Value added (Rs. crores)	Per cent of all India
Andhra Pradesh	68.5	8.1	1180	11.8	98.7	7.0
Bihar	86.4	10.2	336	3.3	5296	3.8
Gujarat	41.3	4.9	967	9.5	17621	12.6
Karnataka	45.0	5.3	512	5.1	6750	4.8
Madhya Pradesh	58.8	8.0	525	5.2	9522	6.8
Maharashtra	79.0	9.3	1518	15.1	32975	23.7
Punjab	20.3	2.4	473	4.7	4008	3.9
Rajasthan	44.0	5.2	-	-	-	-
Tamil Nadu	55.6	6.6	1237	12.3	14261	10.2
Uttar Pradesh	138.1	16.3	797	7.9	11675	8.4
West Bengal	68.0	8.0	825	8.2	6493	4.7
Others	-	-	1675	16.7	20979	15.0
<b>Total</b>	<b>846.3</b>	<b>100.0</b>	<b>10,045</b>	<b>100.0</b>	<b>139397</b>	<b>100.0</b>

*Source* : Government of India, *Survey of Industries*, New Delhi, p. 88.

These figures bring out that the old mineral resource based industries — steel mills, heavy machine building units, plants making machinery for mines, locomotives rails, passenger coaches and rolling stock (wagons for transport of goods) for the railways, cement mills etc. contribute relatively small shares of

both employment and value added in industries and that much larger shares are contributed by industries manufacturing machines for generation and distribution of electricity, transport equipment, consumer goods and consumer durables.

**Table - 4**  
**Share of Major Industry Groups in Factory Sector, 1995-96**

*Per cent Share*

Group	Employment	Invested Capital	Value Added
Food Products	13.3	7.3	6.6
Beverages	6.5	1.0	1.9
Cotton Textiles	9.8	4.0	3.1
Wool & Silk Textiles	3.8	3.5	2.7
Jute Textiles	3.2	0.4	0.7
Textile Products	3.7	1.3	2.3
Paper	3.4	2.5	3.3
Rubber, Petroleum and Coal Products	3.2	5.3	6.6
Basic Chemicals and Products	6.7	14.5	17.0
Non-metallic Minerals	5.0	4.2	4.1
Basic Metals	7.3	16.1	10.0
Metal Products	2.7	1.7	2.3
Machinery other than transport	8.5	8.4	12.6
Transport Equipment	6.0	4.3	7.7
Electricity	9.8	23.3	14.7
Repair Services	0.6	0.2	0.3
Others	4.3	1.3	3.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source : Government of India, *Survey of Industries*, New Delhi, p. 89.

The data of Table 4 give some indication of this. Food processing, beverage and textile industries contributed 40 per cent of the total employment but only 17 per cent of the value added in factories. On the other hand, machinery other than transport and transport equipment accounted for about 15 per cent of employment but more than 20 per cent of value added in factories. The importance in value added of chemicals is due primarily to the high value of pharmaceutical drugs. The basic metals group consists largely of steel mills. The heavy investment in them may be noted.

### Industrial Centres

**Maharashtra :** Most of the industrial units in Maharashtra are located in or around Mumbai (including New Mumbai and Thane) or Pune or along the rail-cum-road strip of about 175 km between Mumbai and Pune. There is a wide variety of industries in this area. Textiles made of cotton, woollen or man-made fibres are still important. Located in the environs of Mumbai are the works of the biggest companies manufacturing office and hospital furniture and consumer durables such as refrigerators and air conditioners. The capacity of the 3 petroleum refineries started in the late 1950's has expanded steadily. Manufacture of cosmetics and pharmaceutical drugs are other important industries because the largest manufacturers of these have their head offices in Mumbai and factories in its vicinity or in Gujarat. Reference should be made also to production of films and television serials. Mumbai is the principal centre for producing them. Although it is difficult to estimate either employment or value added in the industry, there cannot be any doubt about the large size of both.

The biggest industrial units in Pune belong to the house of Kirloskars which manufactures a variety of machine tools, pumps for lifting water from wells and compressors etc., for

refrigerators and air conditioners. The environs of Pune have also a number of defence related industries because of location near it of a factory making ammunition from the last century. The rapid growth of sugarcane production and establishment of sugar mills in several towns in western Maharashtra has provided the basis for growth of factories producing machinery and spare parts for sugar mills. Manufacture of passenger cars was started near Mumbai in the late 1950's; the late 1990's have seen location of a factory manufacturing passenger cars and trucks in Pune.

In contrast to concentration of industries in and around Mumbai and Pune or along the rail-cum-road strip between Mumbai and Pune, there is little industrial development in the other regions of the state Marathwada and Vidarbha. Industrial growth has failed to take off in these regions despite the stated policy of the state government to promote industrial development in them. The principal reasons for it are low productivity of land, under-developed infrastructures and absence of a class of aggressive entrepreneurs.

**Gujarat :** Coastal Gujarat has often been called an industrial workshop. The discovery of crude oil off its coast, has led to establishment of petroleum refineries and petrochemical industries. Manufacture of a variety of machine tools was started by entrepreneurs who returned home from East Africa in the 1960's. Cotton textile mills, located in Ahmedabad and in a number of other cities in Gujarat since the last decades of the 19th century, have diversified in recent years to manufacture textiles made of man-made fibres of Anand in central Gujarat is the headquarters of Amul Dairy, which besides being the principal supplier of liquid milk to Mumbai is the largest manufacturer of dairy products — butter, cheese, baby food, etc., in India. Manufacture of pharmaceutical

by satellites etc. are provided to the computer software companies. One such state of the art technology park has been built by the Government of Ardhra Pradesh on the outskirts of Hyderabad. It provides a basis for establishment of Hyderabad as a centre for the computer software and other information technology industries. The Government of Haryana has provided similar facilities in the environs of Gurgaon located about 30 km. from Delhi. The next few years should see emergence of a number of information technology parks in the environs of Pune, Mumbai, Ahmedabad, Chennai, Calcutta, Lucknow, Trivandrum and Chandigarh i.e. wherever there are large numbers of graduates in the sciences and the state governments create the facilities for location of these industries.

The 175 km strip between Bangalore and Mysore city receives dependable and adequate irrigation from a canal on the Cauvery river. The area produces large crops of rice and sugarcane, has two sugar mills, a number of rice mills and a sizeable class of prosperous farmers. These, along with the industrial and white collar workers and professionals in Bangalore provide a large market for processed foods, high quality textiles and a variety of consumer durables including passenger cars, motor bicycles and mopeds. The South Kanara district in south western Karnataka receives large remittances from its residents working in the Gulf countries. Mangalore, the principal city has a petroleum refinery and a first rate multi-faculty university. Thus, there is a potential for growth of the information technology based industries and a market as in central Karnataka for a variety of consumer goods and consumer durables.

Thus, central and south western Karnataka are likely to remain areas with a variety of industries and a large market among its white and blue collar workers, professionals

and prosperous farmers for a variety of consumer goods and consumer durables. In contrast, the other parts of the state, are under developed. Most of the area is unirrigated; productivity of land which produces millets, cotton and oil seeds as the principal crops is low and there are few industries.

**Calcutta Metropolitan District :** The principal factor inhibiting revival of industrial growth in the Calcutta Metropolitan District is crisis of confidence. Despite the efforts of the present government to attract industrial entrepreneurs to Calcutta there has been no significant return so far. But this is bound to change in the not distant future. Calcutta has too many advantages as the only port and the largest city in Eastern India, wealth of mineral, agricultural and other resources in its hinterland and has a very large population to remain an industrial backwater. Its tea and jute processing industries were not affected by the exodus of entrepreneurs in the late 1960's and have continued to experience steady growth. There are hundreds of small and medium sized industrial units manufacturing components for mining machinery, railways and steel fabrication units. Furthermore because of location of two Universities and a Statistics institute in the city, and an Institute of Management in Barrackpur, there are a large number of graduates in the sciences which provide the basis for growth of the computer software and related information technology industries primarily for the domestic market. Agricultural output has been increasing steadily in West Bengal as a result of the land reforms introduced by the present government and installation of electric motors on a large number of irrigation wells. Thus, there is a potential for establishment of an agricultural equipment manufacturing industry as well as for consumer durable industries to meet the demands of the growing middle class of white collar and

industrial workers in Calcutta and relatively prosperous farmers in the rest of the state.

**Tamil Nadu :** Chennai and Coimbatore are likely to remain the principal industrial centres in Tamil Nadu. Chennai has become over the last five decades a major centre for manufacturing motor vehicles -trucks and buses, passenger cars, motor bicycles and scooters. A factory for manufacturing trucks and buses and another for manufacturing motor cycles and scooters were established in its environs in the 1950's. Production in them has been increasing steadily. During the 1990's, a factory for manufacturing passenger cars has been added. Located in and around Chennai are large number of manufacturers making components (including tyres) for motor vehicles and a variety of consumer durables for the regional and national markets.

Coimbatore, located in the midst of an area which produces high quality cotton in fields irrigated by a canal from the Pykara river, has a large number of textile mills and a sizeable industry manufacturing machinery for the mills.

The principal advantages of Chennai and Coimbatore are availability of labour-disciplined, untainted by militancy and able to learn industrial skills and an adequate number of entrepreneurs.

Chennai has become also a centre for the information technology industry. Some of the best computer software professionals working in the Silicon Valley in California are Tamils. Some of them could return home to establish the industry in their home state. Chennai is also very well located for Indian entrepreneurs in Singapore and other South East Asian countries wishing to establish a base in India. The delta of Cauvery river which receives assured irrigation from canals from the river, has a sizeable class of prosperous farmers who

produce rice as the main crop . In the rest of the state also there are pockets of prosperous agriculture because most of the irrigation wells'are fitted with electric or diesel pumps. Thus there is an adequate market for processed foods, garments and consumer durables among the growing class of prosperous farmers, white collar and skilled workers and professionals. There is also a market for agricultural equipment including pumps for irrigation.

**Andhra Pradesh :** The principal industrial centre in Andhra Pradesh is its capital, Hyderabad. The city has in its environs, a number of public sector industrial units including plants of Bharat Heavy Electricals, Hindustan Machine Tools, Indian Drugs and Pharmaceuticals and a number of defence related laboratories. As mentioned earlier, the infrastructure for establishing an information technology industry has been created and the industry is well established in it.

Large areas in coastal Andhra Pradesh receive dependable irrigation from canals from the Krishna and Godavari rivers. Rice, sugarcane and tobacco are the principal crops. There are a number of rice and sugar mills and a large class of prosperous farmers in this area. Thus, there is a sizeable market for industrial goods including consumer durables among the prosperous farmers and white collar workers. Vijayawada the largest city in the area is not yet an important industrial centre. The other industrial centre in the state is Vijayanagram a port city, which has a steel mill and a ship yard.

**Punjab :** Rapid industrial growth began in Punjab in the late 1950's, when with construction of the Nangal dam part of the Bhakra Nangal irrigation cum-power project, large supplies of electricity began to be available. Punjab was also the centre of the green revolution of the late 1960's which

greatly increased agricultural output and income of the farmers. Well developed rail and road communications is another factor contributing to industrial development of the state. The government of the state actively promoted rural electrification and made a successful agricultural extension effort to increase agricultural output. Furthermore, it assisted industrial development by providing concessional loans and various other incentives to entrepreneurs. Most of them were those residing in the state; others were Ramgarhia Sikhs who returned home after becoming affluent in Thailand and Malaysia to establish medium or large sized industries in Ludhiana. Although Ludhiana is the largest industrial centre in the state, several other cities have a number of industrial units. Amritsar has a large woolen mill and a factory making high quality carpets. Hindustan Machine Tools has established a unit for manufacturing machine tools and watches near Chandigarh. A factory manufacturing coaches for the railways has been established in Kapurthala. The industries located in Ludhiana include :-

- (i) manufacture and/or repair of machine driven agricultural implements — electric or diesel pumps to lift water from irrigation wells, mechanical threshers, improved ploughs and tractors;
- (ii) consumer durables—fans, sewing machines, bicycles, motor bicycles, scooters, 3-wheeler tempos, stoves using liquefied natural gas for cooking. There is a large and growing demand in the towns and villages of the state for all these goods as well as for other consumer durables such as air coolers, television receivers and electrically operated kitchen gadgets;
- (iii) the woolen/hosiery industry established in Ludhiana since the 1920's has experienced rapid growth to meet

increasing domestic and export demands. Exports during the 1960's to the 1980's were mainly to the Soviet Union.

### Prospects for the next decade :

Several indications of the prospects have been given in the foregoing sections and are added to below :

1. There must be sustained growth in basic industries—manufacture of steel, cement, heavy, light and precision machine tools; equipment for generation, transmission and distribution of electricity; transport equipment for both railways and roads; petroleum refining and manufacture of petrochemicals. These industries provide the infrastructure of industrial growth. But most of the employment and value added in industries will continue, as at present, to be in food processing, manufacture of textiles and apparel and other consumer goods and consumer durables.
2. Maharashtra, Gujarat, Tamil Nadu and Andhra Pradesh are likely to continue to be the states with larger shares of both employment and value added in factories than their shares of the population of the country. The states have besides the advantage of an early start, large and rapidly growing urban and rural middle classes.
3. Karnataka should continue to have similar shares of both employment and value added in industries as its share of the total population of the country. The information technology industry and the industries manufacturing machine tools and telecommunication equipment located in and around Bangalore should continue to experience rapid growth in the next decade. Use of computers in industries,



trade and public services has scarcely begun in India and would increase rapidly in the foreseeable future. Growth of computer hardware industry viz. manufacture of small and medium sized computers initially by assembly of imported components in the environs of Bangalore is another prospect. Manufacture or assembly of heavy trucks and of passenger cars which has started in the environs of the city in the 1990's is expected to increase rapidly in the foreseeable future for two reasons. First, there is a large and expanding market for the vehicles in southern India. Second, the companies manufacturing the vehicles are reputed multinationals with access to the latest technology.

The principal advantages of Punjab are an innovative class of entrepreneurs, a large class of skilled workers and a large market for consumer goods, consumer durables and modern farm implements to meet the needs of its progressive and well-to-do farmers and middle income residents of the urban areas who have got accustomed to using manufactured consumer goods and consumer durables. Highly developed infrastructures — rail and road transport and near universal rural electrification — create a large market for trucks, buses, passenger cars, motor bicycles, scooters, etc. Its share of employment and value added in factory industries should continue to be larger than its share of the population of the country.

Steady growth of factory industries would continue to be experienced in the satellite cities of Delhi-Gurgaon and Faridabad in Haryana and Ghaziabad and Gautam Buddha Nagar (NOIDA) in U.P. A variety of consumer goods — processed foods,

clothes for domestic consumption and export, consumer durables such as passenger cars, refrigerators, air conditioners, office furniture, furnishings for home and office, tractors and other farm equipment are already being manufactured in these cities.

6. There Should be relatively rapid growth of industries in Rajasthan because of the policies adopted by the government to promote it. The government has built in various parts of the state a number of townships in which developed land with adequate and dependable supplies of electricity and water and good telecommunication facilities as well as good rail or road connections (for import of raw materials and export of products) are provided to the industries established in them. Furthermore, the entrepreneurs are given exemption from taxation of profits for the first few years. They are assisted also in getting concessional loans from financial institutions. One such township, Bhiwadi, located about 100 km. south of Delhi is fully occupied by factories owned by entrepreneurs based in Delhi or Jaipur. Another factor assisting industrial growth in the state will be growth of tourism. The traditional handicrafts of the state — manufacture of jewellery, tie and die cloth and decorated leather work should have a large market among foreign tourists.
7. Bihar, Orissa, Madhya Pradesh, U.P. and Assam should continue to have much smaller shares in both employment and value added in factories in comparison to their shares of the population.
8. Relatively small shares of U.P. and Bihar, which have 37% of the population of the country but only 11% of the workers in factories and contribute only 12 per cent

of the value added in factories need to be explained. One reason is that except for a few districts of western U.P. both states are poor and backward. Furthermore, the governments of the states have not made any noteworthy attempts to promote industrial development. An additional factor impeding industrial growth in Bihar at present is lack of security of life and property. There is literally a class war in parts of Bihar between former non-cultivating owners of land and their labourers most of whom have become peasant proprietors.

9. Madhya Pradesh and Orissa remain industrially backward despite the fact that they have large mineral resources and established industrial centres in the steel mill cities that are located in them Rourkela in Orissa and Bhilai in Madhya Pradesh. Madhya Pradesh has also the industrial city of Indore in which there could be considerable expansion of industries due to availability of an experienced industrial labour force.
10. Apart from packaging of tea and a small petroleum refinery located near Gauwahati and its traditional handicrafts, there are few industries in Assam. One reason is the relative isolation of the state from the rest of India. However, a determined effort has to be made, initially by the Government of India to establish industries such as a petrochemical plant in the state. With improvements in quality, the products of the distinctive handicrafts of the state should also have a sizeable market in India and abroad.
11. Industrial growth could pick up in U.P. if it is actively promoted by the government. The productivity of the large area irrigated by canals, tube wells and wells fitted with electric or diesel pumps in western

U.P. could also be increased through vigorous agriculture extension efforts. There is a potential also for large increase in output and employment through modernization and improvement in techniques of some of the handicrafts of U.P. such as weaving of carpets around Mirzapur, weaving of silk sarees in a suburb of Varanasi and manufacture of decorative brassware in Moradabad which have large domestic and export markets. The expansion could be more rapid especially for export, if some exploitative practices such as use of child labour in carpet weaving and payment of bare subsistence wages to weavers are ended. The industrial promotion efforts should concentrate on modernization of designs and introduction of improved equipment - larger looms in weaving of sarees and use of power in larger manufacturing units.

There is a prospect also for growth of computer software industry, (principally to meet local demand) in Kanpur which has an institute of technology and is an old industrial centre. Lucknow, Allahabad and Varanasi which have universities which had high standards of teaching until recently could be other centres for growth of this industry.

12. Industrial growth should accelerate in Kerala. Kochi with its naval base, a shipyard and a petroleum refinery is already a large industrial city. There is a prospect of establishment of consumer durable industries for the local market. Kerala receives remittances of thousands of million dollars every year from its residents working in the Gulf countries. Thus there is a sizeable market for consumer durables among the large class of well-to-do residents of the rural and

urban areas of the state. Trivandrum could become the centre of an information technology industry based on an adequate supply of educated manpower and the facility of export of products through its airport. Kerala is also well equipped for winter tourism because of its excellent beaches and a warm, largely storm-free winter. The distinctive handicrafts of the state — decorative brassware and products of coir — should also find an expanding market both within India and abroad.

## Conclusion

It will be clear from the foregoing survey that there are likely to be only marginal changes in the spatial distribution of factory industries during the next decade. Furthermore, inter-state and intra-state disparities in industrial development are likely to increase instead of decreasing during this period.

Economic geographers have often discussed the relative importance of different factors — an early start, proximity to raw materials, access to a disciplined or skilled labour force, capital, entrepreneurs with vision and ability to take risks, professionals with innovative skills and proximity to a large market in explaining location of industries. The foregoing survey has shown that among these factors proximity to raw materials minerals or nonmineral, is the least important. Industries processing raw materials — steel, heavy machinery, cement, paper, sugar, jute, wheat and oil mills, petroleum refineries, factories producing chemical fertilizers and other petrochemicals, although they involve heavy investment contribute relatively small shares of both employment and value added in factory industries. Much larger shares of both employment and value added in industries are contributed by factories which make a variety

of machine tools, equipment for generation, transmission and distribution of electricity, transport equipment including motor vehicles and a large variety of consumer goods and consumer durables. These industries are located typically in the metropolitan areas of large cities which are close to the principal markets for them.

The militancy of trade unions induced in the late 1960s shift of industries from the Calcutta Metropolitan District to the south and west Indian states of Tamil Nadu, Maharashtra and Gujarat. Return of capital to CMD has not been significant despite the efforts of the present Government of West Bengal to secure the return.

The phenomenal growth of the computer software and other information technology based industries in and around Bangalore shows the influence of skilled professionals in the beginning and rapid growth of an industry. The next decade should witness establishment and progressive growth of this industry primarily to meet domestic demand in a number of other centres.

The successful efforts of the Punjab Government to promote industrial development in the state in the late 1950s and early 1960s aided by an abundance of skilled workers and venturesome entrepreneurs has led to establishment of a variety of industries ranging from manufacture of carpets and woolen textiles to agricultural machinery in different cities of the state.

On the other hand the indifference of the governments of U.P., Bihar, Orissa and Madhya Pradesh towards, promoting industrial development in their states is partly responsible for the industrial backwardness of these states. Their shares in both employment and value added in factories are much smaller than their shares of the population of the country.

However, government policies also have their limitations. The effort of the government of Maharashtra to promote industrial development in the backward regions of the state has had little success so far.

The environs of metropolitan cities including their satellite cities are the most favoured locations for factories. Even resource based industries such as petroleum refineries

and factories making machine tools and motor vehicles, besides those making a variety of consumer goods and consumer durables locate in them. The developments of the last decade indicate that such spatial distribution is unlikely to change in the next decade. A detailed analysis of the reasons for such location in one metropolitan area would be a fascinating study.

## DEVELOPMENT AND SOCIAL CHANGE : SOME CHALLENGES FOR WOMEN'S HEALTH

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### Abstract

The present paper attempts to examine the interlinkages between the changing perception of development vis-a-vis the concern for women's health. It highlights the shift in development thinking in the context of population concern from targeting women during the 1970s and 1980s to making men more responsible in 1990s. Emphasis has been laid on the need to address women's health beyond reproductive span. It is important to have gone through a healthy childhood in order to experience sound reproductive years, it is equally important to have support from healthy elderly women to make reproductive responsibilities less cumbersome. The paper addresses the need to expand the frame of women's health concern beyond reproductive limits. Special reference has been given to the sexually transmitted infection specially HIV/ATDS in discussing women's vulnerability in this context. Empirical evidences have been drawn from relevant sources.

Demographic consequences of such a scenario of women's health has also been discussed. Orphanhood and loss of manpower due to higher mortality among adult population; change in the conventional living arrangement of the family; and increase in the expenditure of the already burdened health sector are some of the issues addressed in the present paper.

This paper recommends creating awareness among young and adolescent girls regarding sexuality; provision of appropriate health care in early ages; health and family life education; information regarding STL; and advice on nutrition and involvement of individuals and NGOs as check measures for policy making and programme implementation. Only then women can be seen as 'self' and not a part of herself the procreator and it is only then that reproductive health can become a meaningful concept.

In the recent past ever since the consciousness regarding the inter-relationship between population and development has grown, role of women in this linkage has become crucial. Genesis of the slogan '*Gender Equality. The Key to Sustainable Development*' given on the occasion of Population Day in 1995, started about 20 years earlier with the first International

Conference on Population which was held in 1974 in Bucharest. The conference brought to the light two perspectives on population and development. The Developed West held the view that population growth was the cause of poor economic development among the underdeveloped and developing countries of Asia and Africa. Their view point made them more ready to invest

in population control programmes in the Less Developed Countries in the Central and Oriental part of the globe. The less developed countries (LDCs) however, due to their own viewpoint that poverty was the cause of high population growth, wanted investment in development. The LDCs' contention was that if development occurs, population growth will automatically be arrested. In all their concern, however, the MDCs reflected upon a biased approach towards population control in LDCs, which eventually meant targeting women. It took more than two decades since then to address men for it. The Cairo Conference held in 1994 gave some indications of making men responsible for parenthood. It is also noteworthy that this conference incorporated the element of development and was termed as International Conference on Population and Development, implying the growing emphasis on the development component.

### **Shift in Development Thinking :**

Transition from the first conference on population in Bucharest to the second International Conference on Population held in Mexico in 1984 saw the participants to the population debate change their stand. Most LDCs increasingly favoured Population Control/ Planning Programme and the US declared that population growth did not impede development, although it continued to contribute generously for Population Control Programme in the LDCs. The broadening horizon since Mexico ushered in the shift of focus from lowering fertility to concern regarding sexuality, reproductive health and making men more responsible for family building process. This was evident in the debates and discussions held during Cairo Conference in 1994. The remarkable change was the recognition of the linkage between population and sustainable development and wider acceptance of the role of women in the development process. In bringing about this shift, three groups have been very instrumental, the NGOs, the health professionals and the women themselves. Change in the attitude towards women and their new roles in communities and societies

have reflected increasing democratization and allotment of more space to women.

### **Genesis of Concern for Women's Health :**

After the Alma Ata conference in 1978, 'Health for all' was the goal set by many countries in the world. India being one of the signatories of the Declaration, started with some programmes and policies towards the attainment of this goal. The resolution to provide health for all (HFA) by 2001 AD has been pushed ahead by 10 years to 2011 AD because of certain lacunae in the planning and implementation of the programmes as well as the policies. To ensure achievement of HFA, health care services need to include health education, nutrition and food supply, water and sanitation besides maternal and child health care as the areas of concern. It is assumed that all individuals have equal access to these services overlooking the social reality of gender bias which operates against women.

Women's situation has always varied over space and time. Consequently, women's health movement emerged in varying forms and styles around the world during the last couple of decades. The basis of the movement was the quest for the right to full parenthood; the right to equal treatment in all spheres and the right to dignity and self determination. Within the area of health, the primary concern has been with reproductive rights-right of women to decide whether, when and how to have children. Until as recently as 1991 women's perspective on these issues were yet to be integrated in the related programmes despite the fact that women are the major users of health services and fertility regulation technology. There has been little attempt on the part of the researchers, policy makers or service providers to seek their point of view to take account of their perspective.

Understanding women and their needs has gradually seen the shift from models based on external stereotypes to more practical experience within the framework of their respective society. The health professional have challenged the bio-

medical model of health, particularly, 'the mere demographic justification for sexual and reproductive health'. Women's movements despite the label of feminism have earned a reputation of sincerity among the grassroot workers. These groups have been particularly significant in challenging the traditional social values and religious practices ranging from genital mutilation, commonly practised in parts of the African continent; to child marriage, son preference and dowry deaths prevalent in South Asia; to sexist offenses in the U.S. and other developed countries.

### Women's Health Versus Reproductive Health :

The emphasis given to women's health till now remains limited to her reproductive role reinforcing what the three major groups who brought the conceptual shift have been fighting against. Although some considerations have been made in making men responsible for their sexuality and sexual behaviour, what remains very largely neglected is women's health outside her reproductive span - before and after. This drives

us to consider the health of girls and elderly women. The former because, they are the foundation of adult womanhood and the latter because, they are the counsellors for the young girls and young women; and often the care givers to infants and children. If their health is good and understanding of 'health' is reasonable, then, those who experience reproductive span will be better organised and be well prepared for their reproductive role. Expenditure on health will also be lowered. Women's experience regarding menarche suggest that those who were informed about it in advance were better prepared for its onset than those who were not<sup>2</sup>.

Globally, women's health has been restricted to reproductive health or at the most, reproductive and child health. Tremendous emphasis is visible on this segment of health. Except for the sporadic elements that suggest shift in the thrust from being women oriented to making men more responsible, much at times, appears to be same as mother and child health care- the MCH of the 1970s. A perusal of the age specific death rates (Table 1) reflect on the dismal fact of much higher death rate

**Table-1**  
**Age Specific Death Rates of Girls and Women in India, 1994**

Age Group	Rural	Urban	Total
0-4	26.5	15.6	23.9
5-14	2.1	1.1	1.7
15-34	3.0	1.8	2.5
35-49	4.8	2.8	4.9
50 +	30.1	25.4	33.0
*60-64	23.3	20.2	22.6
*65-69	33.0	26.5	31.5
*70+	83.2	74.6	81.3
*All Ages	9.7	6.2	8.9

Source : Sample Registration System, Fertility and Mortality Indicators, 1994, RGI New Delhi.

And \* Table A.20, Family Welfare Programme in India Yearbook 1995-96. Department of Family Welfare, Ministry of Health and Family Welfare, Govt. of India.

Note : Figures exclude Jammu and Kashmir.

among girls in younger ages, most below 5 years, than those in the reproductive ages.

Despite the steady decline in the infant and child mortality, and despite the biological advantage of girls being more resistant to infection and malnutrition, the mortality rate of girls is higher than boys in a number of developing countries (WHO, 1991). Analysis of sex-specific mortality by cause has found out an excess of female mortality among children aged 1-4 years, with more girls than boys dying from diseases preventable by immunisation (United Nations, 1991). Several studies have suggested that the existing high mortality rates of girls in many developing countries are not due to poverty or biological reasons, but simply to son preference, leading to discriminatory treatment of girls in term of food provision and even parental care (WHO, 1991). The total number of missing girls as a result of such discrimination is estimated to be about 60 million (Dreze and Sen, 1989, p. 78). Despite such scenario the protagonists of reproductive health continue to undermine the issue of the health of the girls.

This concern is largely due to the statistics for maternal mortality which places India at 570 maternal deaths per 100,000 live births and perhaps due to the funds that have been geared in this direction by international NGOs. India's scenario is only better than Africa (excluding Southern Africa) where the range is between 600-700 per live births. The world figure lies in the range of 300-350 per 100,00 live births. The corresponding figures for the LDCs and the MDCs are 420 and 26 per 100,000 live births respectively. In all probabilities these figures would be much lower if young girls enjoy health than at present.

### Health Infrastructure :

There has been a marked expansion in the infrastructure of the health sector during 1951-91 which is evident from manifolds increase in the medical units and personnels. The existing regional disparities however, suggest that much still remains to be done. (Table 2).

**Table-2**  
**Expansion of Health Care Services in India, 1951-1991**

Health Services	1951	1961	1971	1981	1991
Medical College*	28+	60	98	111	128
Hospitals	2694	3094	3962	6804	11174
Dispensaries	6515	9406	12180	16751	27431
Community Health Centres#	-	-	-	217	2071
Primary Health Centres#	725	2565	5112	5740	20450
Sub Centres#	-	-	28489	51405	130958
Hospital beds	117178	230000	348655	569495	180548
Doctors	61840	83756	151129	268712	394068
Dentists	3290	3582	5512	8648	10751
Nurses	16550	35584	80620	154280	340208

*Source : Ministry of Health and Family Welfare Report 1992, GIO.*

**Note :** + Pertains to 1950

# As on March 31

\* As on December 31



The central Plan Outlay for major schemes of social sector is reflective of government efforts in this direction. Since the introduction of the New Economic Policy in the early 1990s the central Plan Outlay for the Department of Health has been stepped up from Rs. 302 crores (Budget Estimates) in 1992-93 to

Rs 670 crores in 1995-96. Similar increase is visible in the other two sectors because budget allocations have improved over last 5-6 years, bigger share allocation to family welfare continues to speak of the positive bias towards population control programmes and the neglect of health of women and children (Table 3).

**Table-3**  
**Outlay for Major Schemes of Social Sectors in India 1992-1996**

Department	1992-93		1993-94		1994-95		1995-96	
	BE	Actual	BE	Actual	BE	Actual	BE	Actual
Health	302	383	483	402	478	599	670	—
Family	1000	1190	1270	1523	1430	1972	1581	—
Women and Child	452	481	569	573	662	662	730	—

Source : *Economic Survey India 1996*, Table 10.1.

Note : BE - Budget Estimated.

## Gender Disparity

The paradox that marks Indian women is their deification - numerous goddesses of Hindu mythology to Bharat Mata to Dharti Mata on the one hand and her low social status that makes her vulnerable, on the other. Contrary to this, on a practical plane, also notable is the fact that Indian women could get many of the constitutional provisions such as right to vote, right to equal pay for equal work, much before their counterpart in many developed countries of the world. More women country heads have come from developing than developed countries. The prevailing traditions and socio-cultural milieu remain largely responsible for the discrimination between boys and girls and men and women.

Gender Disparity, for instance, in the nutritional intake of girls and boys which continues to be perpetuated by socialization, even at the older ages, becomes overtly visible when the girls enter adulthood and engage in procreation. Compounded with what happens during the childhood are the social norms of adult life. The pressure exerted by strong values attached to motherhood, stronger still for son; one's own

sexuality and that of spouse or sexual partner, make women more vulnerable. Profile of daily activities of women in most studies have suggested that the time spent for self is least and given last priority. Circumstances of childhood and adolescence render womanhood susceptible to health risks, most of which are related to basic innate need of adulthood-sex.

An attempt has been made to understand regional disparity in health status of women in India using the National Family Health Survey (NFHS) data. In this exercise, the methodology of Population Action International (PAI) has been used. For the 25 states covered in the NFHS, scores are compiled for each state by adding four selected measures (indicators) of women's health which three are related to the general health of the women and the fourth accounts for the gender gap. Each measure has a maximum of 5 points, the maximum possible score, thus, being 20. The measures (indicators) selected are:

- H1: Women's age specific death rate (WASDR) 0-4 yrs.
- H2: Women's mortality in reproductive ages (WMRA).

H3: Women's life expectancy at birth (WLEB).

H4: Man/Woman differentials in life expectancy (DLE).

Analysis of the result is as follows:

#### **Women's age specific death rate (WASDR) (0-4 yrs)**

It is revealed that large North Indian Hindi speaking states have higher infant and child mortality among girls than boys. Smaller states like Goa, Kerala, Mizoram, Manipur and Nagaland experience the reverse. Goa scored maximum, that is 5 while UP scored 0.4, the lowest.

#### **Women's mortality in reproductive ages (WMRA).**

Maternal mortality is an important consequence of maternal depletion syndrome. Frequent pregnancies, juvenile motherhood and inadequate nutrition and poor health care contribute further to the already grim scenario of women's health in developing countries. Tripura, Assam, Jammu and Kashmir, Bihar, Uttar Pradesh and Arunachal Pradesh experience higher mortality among women in reproductive ages. Nagaland, Goa, Meghalaya and Kerala score well on this measure reflecting upon lower mortality among women.

#### **Women's life expectancy at birth (WLEB).**

Kerala has the highest WLEB 73.7 years. The lowest 53.2 years is recorded for Madhya Pradesh. Punjab and Maharashtra have high WLEB. Assam, Orissa and UP are other states which have low WLEB.

#### **Man/Woman differentials in life expectancy (DLE)**

While the world over, women live longer than men on an average, in the developing countries, particularly South Asia, the reverse is true. Regional disparity in this regard in India suggests that southern states experience higher longevity for women while the northern states experience lower. In Kerala life expectancy of

women is 5 years longer than men. Himachal Pradesh, Madhya Pradesh, Uttar Pradesh, Bihar and Orissa are states recording higher longevity for men than women.

### **Disparity in Health Status**

Kerala ranks highest as regards health status of women with a total score of 16.0 followed by Goa scoring 14.4 points. It is interesting to note that Nagaland, one of the Northeastern States with fewer facilities ranks third with a score of 11.4 points (Table 4). On an average, women in the southern states enjoy better health than those in northern states. However, Tamil Nadu in the south and Punjab in the north appear to be exception to the rule (Fig. 1). Among the Eastern and North-eastern States a mixed scenario emerges due to reasons such as infrastructure, perception of the problem and decision-making for health care.

Given the present disparity in the health status, the vulnerability of women increases both in terms of health problems as well as care services. In addition, changing social norms and the highly discriminatory socio-cultural milieu, further deteriorate the situation.

### **Changing Social Norms and Health Risks**

Education and exposure has equipped women with many advantages and has also loaded them with some disadvantages. While on the one hand she is in a position to assert better, on the other hand, she has also faces the dilemma of changing social norms relating to physical body contacts. Moreover, women continue to be at sub-equal position to men who remain the decision maker in socio-economic, political and personal spheres of the household. Women's education and employment needs are given low priority. They are often married off at early ages even before their bodies are physiologically fit for pregnancy and childbirth (Basu, 1993). Women's probability of experiencing ill-health largely depends on the factors influencing the magnitude of exposure to risk related events and activities such as low calorie food intake; unhygienic

**Table-4**  
**Health Status of Women in India, 1991-94**

Status	HEALTH INDICATORS				Total Score	Rank
	H1	H2	H3	H4		
Delhi	0.7	1.1	4.0	4.0	9.8	5
Haryana	0.5	1.0	4.3	1.1	6.9	16
Himachal Pradesh	1.2	1.7	4.3	-0.2	7.0	15
Jammu & Kashmir	1.0	0.7	4.0	0.4	6.1	17.5
Punjab	0.8	1.5	4.6	1.8	8.7	7.5
Rajasthan	0.5	1.3	3.8	0.5	6.1	17.5
Madhya Pradesh	0.5	1.1	3.6	-0.6	4.6	22
Uttar Pradesh	0.4	0.7	3.7	-1.6	3.2	24
Bihar	0.5	0.8	3.7	-0.7	4.3	23
West Bengal	0.7	0.9	4.2	1.5	7.3	14
Arunachal Pradesh	0.8	0.8	4.0	0.4	6.0	19
Assam	0.5	0.7	3.7	0.5	5.4	21
Manipur	2.4	1.4	4.0	0.4	8.2	11.5
Meghalaya	0.8	3.0	4.0	0.4	8.2	11.5
Mizoram	2.7	1.6	4.0	0.4	8.7	7.5
Nagaland	2.0	5.0	4.0	0.4	11.4	3
Tripura	0.4	0.7	4.0	0.4	5.5	20
Goa	5.0	5.0	4.0	0.4	14.4	2
Gujarat	0.7	1.3	4.1	2.5	8.6	9.5
Maharashtra	1.7	1.2	4.4	2.7	10.0	4
Andhra Pradesh	0.7	1.3	4.2	2.4	8.6	9.5
Karnataka	1.3	1.0	4.3	3.1	9.7	6
Kerala	3.0	3.0	5.0	5.0	16.0	1
Tamil Nadu	1.0	0.9	4.2	1.8	7.9	13

Source : NHFS Report for the States 1991-94.

Note : H 1 : Women's age specific death rate (WASDR) 0.4 yrs.

H 2 : Women's mortality in reproductive age (WMRA).

H 3 : Women's life expectancy at birth (WLEB).

H 4 : Man/Woman differentials in life expectancy (DLE).

2. Negative scoring in H4 indicates that Female Life Expectancy at Birth is lower than males.

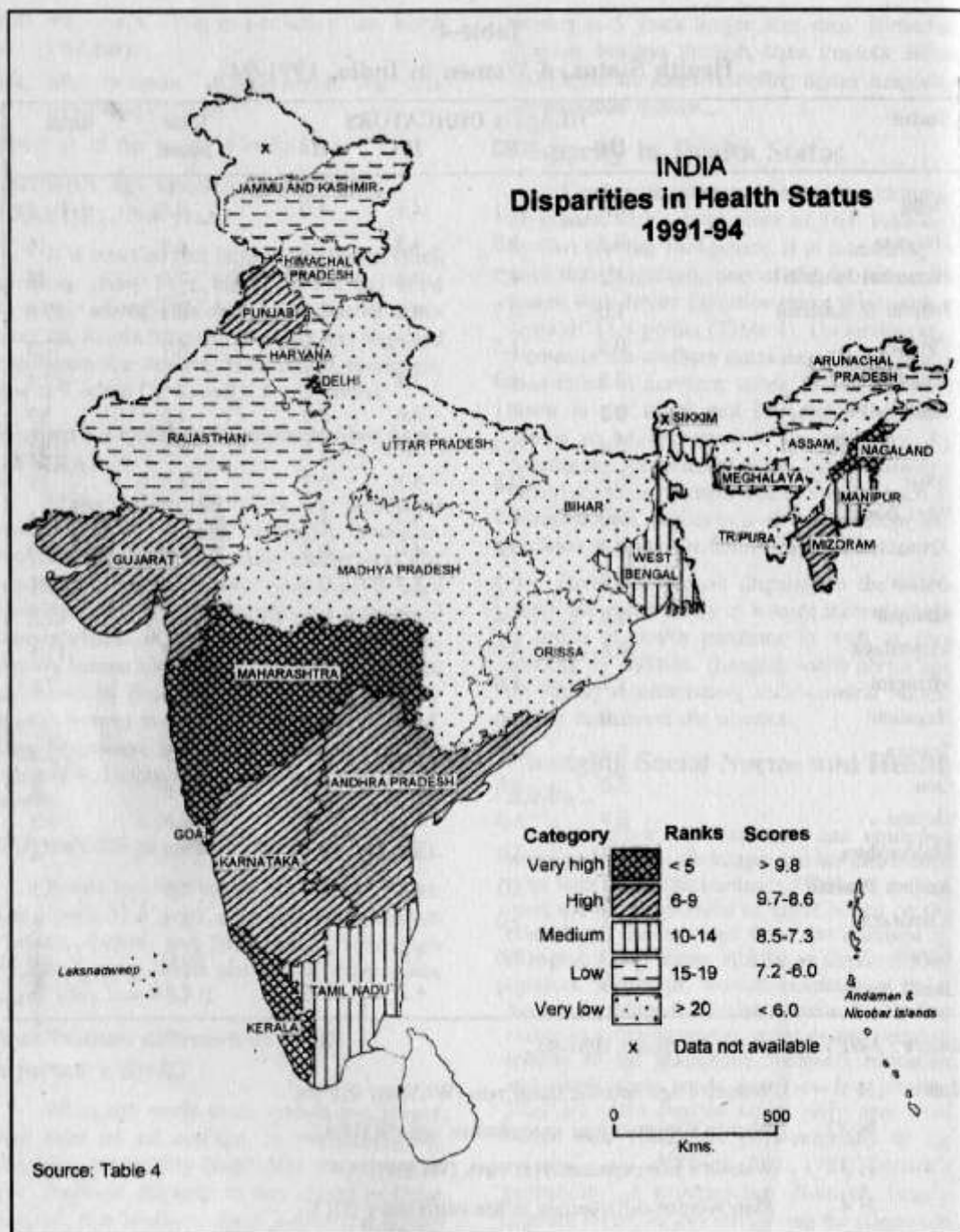


Figure 1

handling of menstrual flow; and unsafe sexual contacts. The most important factor is the timing of entrance into sexual unions or the onset of sexual activity. In societies like ours where the sexuality of young unmarried women is rigidly controlled to preserve their chastity until marriage occurs, women are discouraged from entering into pre-marital casual relations of their choice, and are, thus, spared the risks of exposure till entry into marital sexual union. However, with the growing change in the various segments of societies, pre-marital sex is being practised exposing the young women too, to such risks very early in lives. There are indications that, gradually, under the onslaught of westernisation, the foundations of the rigid chastity regime of the orthodox societies are crumbling and the pre-marital sex, if not explicitly, is certainly being practised surreptitiously. Intensification of liberal teenage sexual activity and growing disregard for tradition, undoubtedly account for part of the increased exposure.

The changing social scenario calls for re-examination not only of the existing health and social problems and their root causes, but also of the sexual behaviour and attitude of the people because a majority of health problems are sociogenic. Multi-partner sexual contacts' sexual union with infected partner(s) are some major causes of probable health risks. Moreover, psycho-sexual aspects of an individual's personality are deeply rooted in one's socio-economic milieu. Women's decisions regarding their own sexuality is by and large governed by male partner(s). Men's sexual behaviour is multifaceted and exposes women to risks in various ways. The frequency of men's extramarital relations is often a function of population movements, particularly of voluntarily migrating men involving periods of spouse separation. When men leave rural areas without their families, the chances of their entering into multiple casual contacts with infected women in urban areas are considerably increased (John and Johnstone, 1993, p. 78). Considering circular or return migration as part of the population flows, their wives' exposure to sexual health risks is highly increased. Another important mechanism

of infection are the norms regulating remarriage and sexual behaviour of widows. This in an area which needs very sincere and tactful exploration because of the sensitivity of the individuals involved, that is the widows - those women who according to social norms must abstain from sex.

**Sexually Transmitted Infection (STI) and HIV/AIDS Susceptibility:** In the context of HIV/AIDS women stand exposed to the risk of contracting the infection as care givers, as medical professionals, as mothers of infected children, as wife of infected men, and as partners of infected persons. Men's exposure to such risk is determined largely by age because their sexual activity increases with age. As a result, relatively older men are more likely to be affected than younger ones. Thus, because of the social norms that encourage a large gap between the ages of spouses, lifetime probability of contracting infection is high increase among women. Postponement of the initiation of sexual contacts from lower ages as a result of actual increase in the age at marriage to higher ages is, however, likely to reduce the lifetime risk of contracting STI substantially.

Among married men the frequency of extramarital relations largely regulate their exposure to the infection and also that of their spouse. Adulterous relations established by wives are, although, not uncommon, is seen as morally wrong and is greatly despised and generally punished. Adultery by men, although seldom sanctioned, is regarded as less offensive. Husband's extramarital activities, if not directly encouraged, are at least widely tolerated, particularly during the rigidly enforced periods of post partum abstinence (Savara, 1992). Changing urban social life has led to the emergence of informal but regular attachments to a few women in lieu of formal marital relations. This is conducive to higher exposure for men and hence for their partners. Among younger unmarried men, early sexual contacts, particularly, but not solely, with sex workers, appear to be on the increase (Johnson and Johnstone, 1993; Goyal, 1993). This increases men's risk of contracting infection prior to marriage.

The STI can remain concealed for very long period of time before becoming visible. Women and men are exposed differently to health risks particularly because of STI. The higher order pregnancies among infected women are likely to trigger further complications and result in a fullblown attack of HIV on the immune system if entered into sexual union with a seropositive person (Mann, 1992, p.46). In this situation, women with STI would experience shorter incubation time between sero-positivity and HIV than the seropositive persons not suffering from any STI. Moreover, since AIDS is always fatal, this amounts to saying that the expected lifetime for infected and fecund women is shorter than for infected men. Also, a long child bearing period punctuated by numerous pregnancies increases the chances that higher order deliveries will result in acute anaemia, particularly if women are already affected by other debilitating diseases such as malaria or suffer from malnutrition (Prakash, 1993, p. 98). As long as infected women remain in positions that force them to exchange sex for favours and remunerations or to acquiesce to kin's demands in order to reinforce men's authority; and as long as these norms, behaviours and practices keep women fully exposed to infected men; repeated infection will be more likely and so will be the consequent shortened survival time of women.

### HIV Infection - Global Concern :

With almost all the major countries reporting at least one person infected with HIV, the dreaded

syndrome has acquired the form of a pandemic. Of the estimated 9-11 million people testing HIV positive in the world today, more than 3 million are women and 1 million are children. Given the rate at which the epidemic is spreading and the control systems that would be or /and are being devised to fight it at global and national levels, more than 90 per cent of the infected cases are expected to be in the developing countries by the end of the present decade. The epicentre of the infection is shifting from the sub-Saharan Africa to south and south-east Asia particularly India and Thailand. While infection in India is on the rise, Thailand is producing evidence of a fall in new infection by nearly 1% over last 5 years. At present 23% of adult population is living with HIV. Unlike the situation in the 1980s, more Asians than Africans have been reported to be infected during the first half of this decade (ICA, 1994, p. 2). The World Health Organisation estimates that at least 30 million people around the world could be infected by the year 2000 AD. Over 8 million people who were infected by 1988, nearly one-third (3 million) of them were women. The escalating spread of the infection and the disease during the last decade has caused serious concern. While 500,000 persons were infected during 1990-91, the number rose to the enormous 5.8 million during 1997. Among them about 590,000 were children below the ages 15 years (Figure 2). Among the 500,000 people who developed AIDS during 1990-91, 200,000 were women (Table 5). During 1990s annual number of AIDS cases among women is expected to

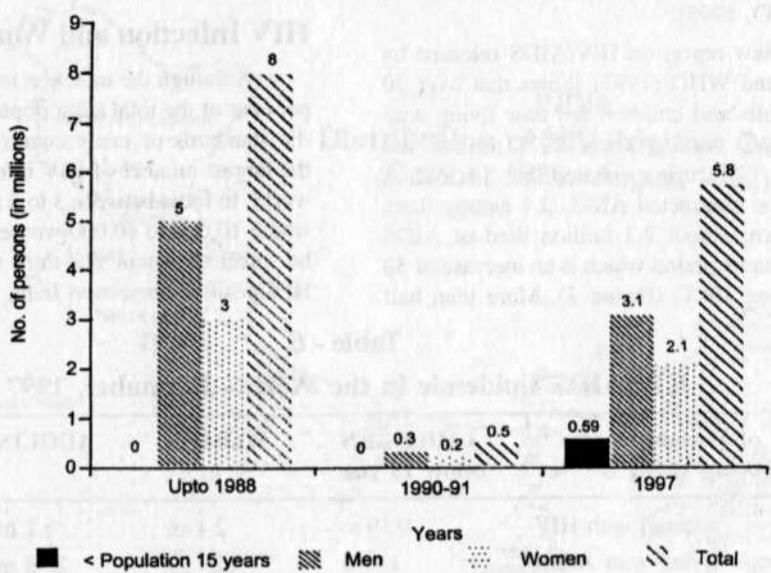
**Table - 5**  
**Steep Rise 1988 - 97**

Persons	Upto 1988	During 1990-91	During 1997
< Popn 15 yrs.	Nil	Nil	0.59 million
Men	5 million	0.3 million	3.1 million
Women	3 million	0.2 million	2.1 million
<b>Total</b>	<b>8 million</b>	<b>0.5 million</b>	<b>5.8 million</b>

Source : WHO (1990) : 'News about AIDS' *World Health Forum*, Vol. 12.

Figure 2

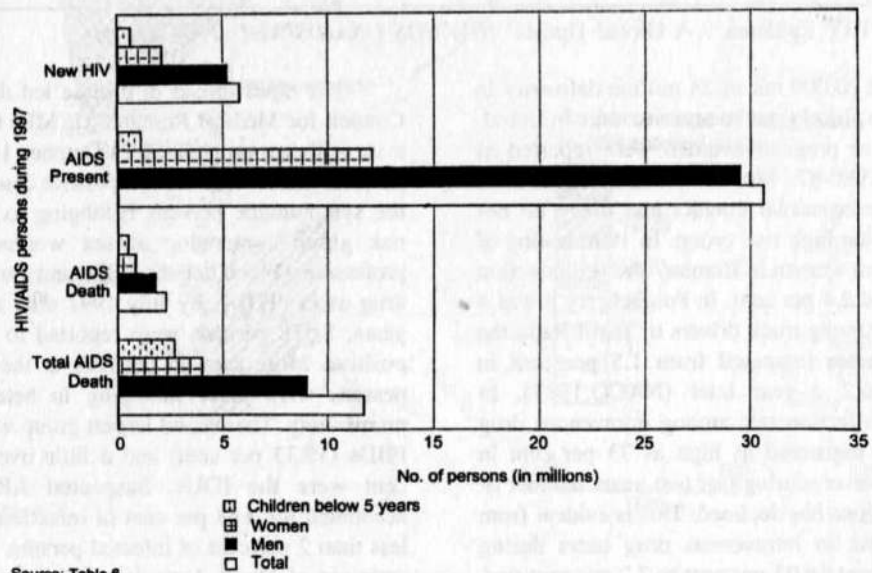
**HIV Infection Steep Rise: 1988-97**



Source: Table 5

Figure 3

**HIV/AIDS Epidemic in the World - December 1997**



Source: Table 6

equal that of men by 2000 AD. However, in sub-Saharan Africa, HIV prevalence among women was higher (55%) than men (45%) as early as 1993 (WHO, 1995).

The new report on HIV/AIDS released by UNAIDS and WHO (1997) shows that over 30 million adults and children are now living with the infection. Among them 12.1 million are women. In 1997, it is estimated that 5.8 million persons who contracted AIDS, 2.1 among them were women. About 2.3 million died of AIDS during the same period which is an increase of 50 per cent over 19CG (Figure 3). More than half

the deaths occurred among women. Total deaths reported due to AIDS are to the tune of 11.7 million of which 4 million were women (Table 6).

### HIV Infection and Women in India :

Although the infection in India is close to 1 per cent of the total adult population, still low by the standards of many countries, yet, India has the largest number of HIV infected people in the world. In India between 3 to 5 million persons, of which 10,000 to 40,000 women, are estimated to be infected. About one-third to one-half of the HIV positive persons in India are women. Every

**Table - 6**  
**HIV/AIDS Epidemic in the World - December, 1997**

Category of Persons infected during 1997	CHILDREN below 15 yrs.	WOMEN	ADULTS	TOTAL
People newly infected with HIV	0.59 m	2.1 m	5.2 m	5.8 m
No. of people living with AIDS	1.1 m	12.1 m	29.5 m	30.6 m
AIDS death	0.46 m	0.82 m	1.8 m	2.3 m
Total No. of AIDS death since the beginning of the epidemic upto 1997	2.7 m	4.0 m	9.0 m	11.7 m

*Source* : 'HIV Epidemic - A Global Update' HIV/AIDS UNAIDS/WHO 1997 Report.

year about 20,000 out of 24 million deliveries in India are likely to occur to be infected. Seropositive pregnant women were reported as early as 1986-87. Most of them were infected through heterosexual contact and many do not belong to the high risk group. In 1996 testing of the pregnant women in Bombay showed infection rate around 2.4 per cent. In Pondicherry it was 4 per cent. Among truck drivers in Tamil Nadu the infection rates increased from 1.5 per cent in 1995 to 6.2 a year later (NACO:1997). In Manipur, infection rate among intravenous drug users was registered as high as 73 per cent in 1964. However, during last two years number of new infections has declined. This is evident from the decrease in intravenous drug users during 1992-97 from 18.03 per cent to 7.2 per cent (ref. table 7).

The rapid spread of disease led the Indian Council for Medical Research (ICMR) to launch a surveillance programme in October 1985. The purpose was to trace the seropositive cases among the symptomatic persons belonging to the high risk group comprising of sex workers (SW), professional blood donors (PBD) and intra-venous drug users (TDU). By July 1992 after about six years, 8,578 persons were reported to be seropositive. More than 45 per cent of the infected persons were those indulging in heterosexual promiscuity. The second largest group was of the PBDs (19.33 per cent) and a little over 18 per cent were the IDUs. Suspected ARC/AIDS accounted for 3.68 per cent of infection. A little less than 2 per cent of infected persons were the recipient of blood. Less than 0.5 per cent each contracted the infection through homosexual



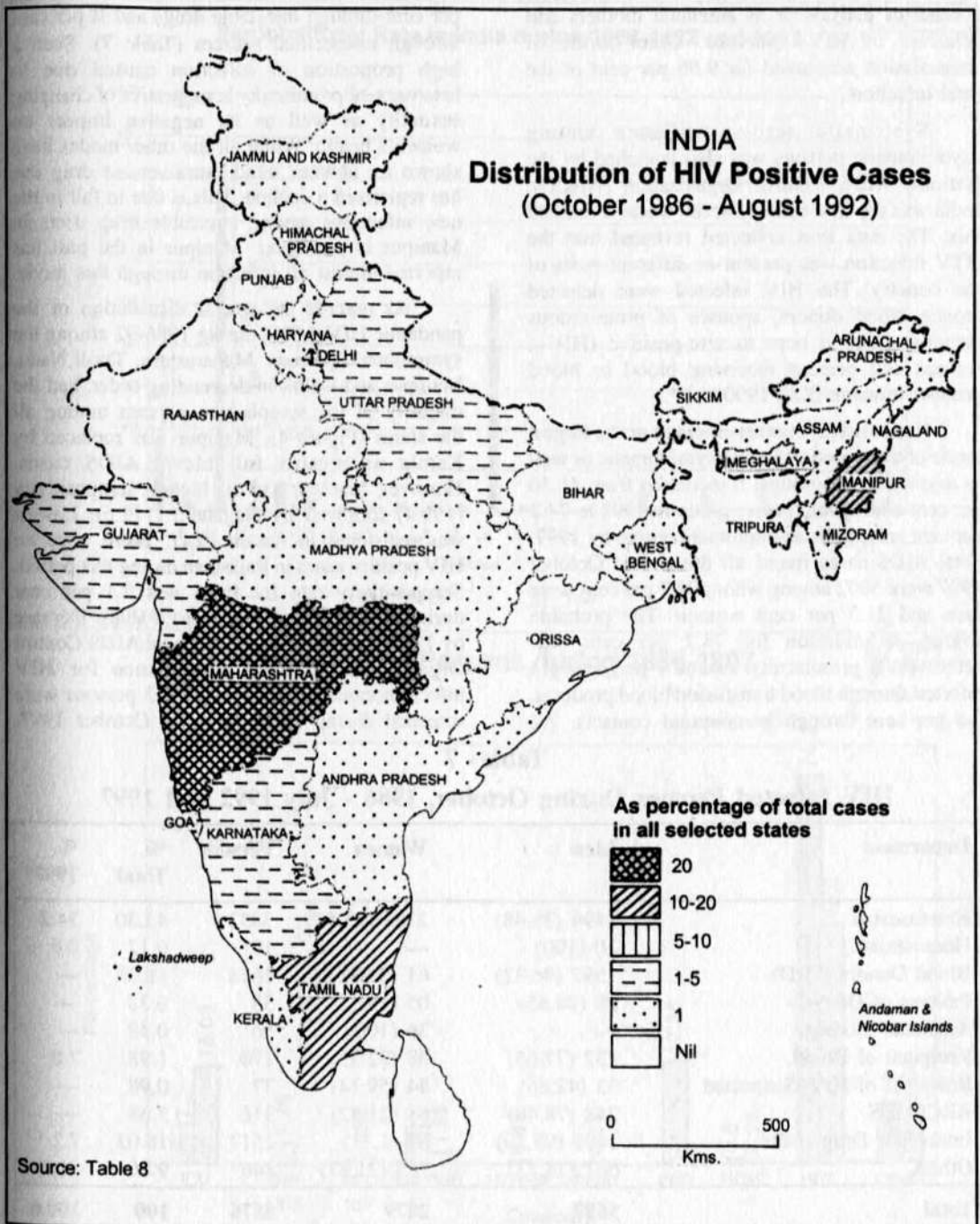


Figure 4

contact or dialysis or as antenatal mothers and relatives of HIV+ persons. Other mode of transmission accounted for 9.86 per cent of the total infection.

Systematic sero-surveillance among asymptomatic persons was also launched by the National AIDS Control Organisation (NACO). India was the first country in the world to initiate this. The data thus collected revealed that the HTV infection was present in different parts of the country. The HIV infected were detected among blood donors, spouses of promiscuous persons, children born to sere-positive (HIV+) women and persons receiving blood or blood product infusion (Lal, 1990).

Heterosexual contact emerged as the largest mode of transmission among symptomatic as well as asymptomatic groups. It increased from 45.30 per cent among the former group in 1992 to 74.2 per cent among the asymptomatic group by 1997. Total AIDS cases found till the end of October 1997 were 5002 among whom 78.7 per cent were men and 21.3 per cent women. The probable source of infection for 74.2 per cent was heterosexual promiscuity. About 7 per cent got infected through blood transfusion/blood products, 0.6 per cent through homosexual contacts, 7.2

per cent through injectable drugs and 11 per cent through unspecified sources (Table 7). Such a high proportion of infection caused due to heterosexual promiscuity is suggestive of changing sexuality as well as its negative impact on women's health. While all the other modes have shown an upward trend, intra-venous drug use has registered a decline. This is due to fall in the new infections among injectable drug users in Manipur in particular. Manipur in the past has reported almost all infection through this mode.

As regards the spatial distribution of the pandemic HIV/AIDS, during 1986-92 among the symptomatic persons, Maharashtra, Tamil Nadu, Manipur and Delhi, in descending order, had the majority of the seropositive persons among all the states (Figure 4). Manipur was replaced by Kerala as regards full blown AIDS cases. However, Manipur had the highest seropositivity (159.4) followed by Nagaland (111.6). Lowest was registered in Assam (0.4). There were no HIV positive cases in Rajasthan during this period. Seropositivity rate for India was 7.1 per cent during this period. It registered a sharp increase by 1997. According to the National AIDS Control Organisation (NACO) surveillance for HIV infection cases in India 3,200,357 persons were screened during 1986 up to 31 October 1997.

**Table - 7**  
**HIV Infected Persons During October, 1986 - July 1992 and 1997**

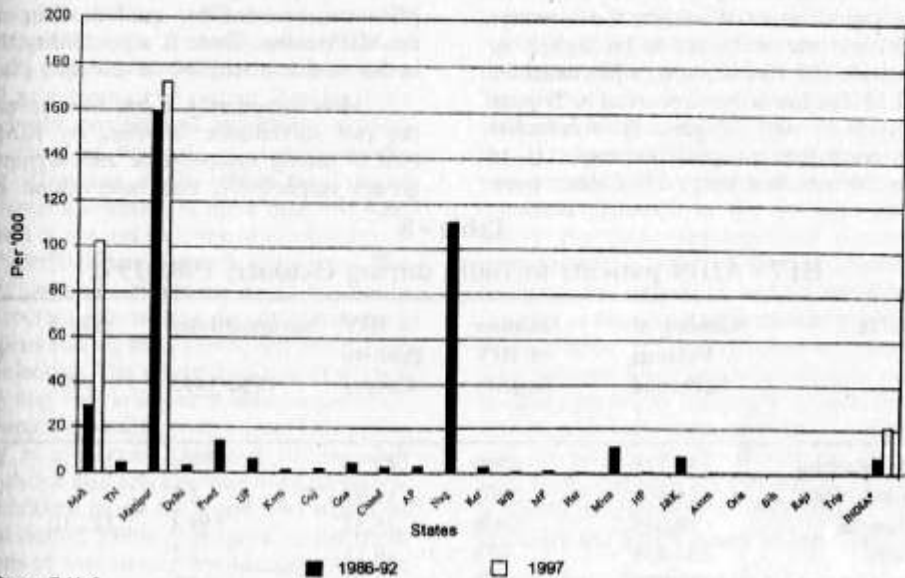
Department	Men	Women	Persons	% Total	% 1997*
Heterosexual	1494 (38.48)	2389 (61.52)	3833	45.30	74.2
Homosexual	10 (100)	—	10	0.12	0.6
Blood Donors (PRD)	1597 (96.32)	61 (3.68)	1658	19.33	—
Patients of Dialysis	28 (84.85)	05 (15.15)	33	0.38	—
Antenatal Mothers	—	36 (100)	36	0.42	—
Recipient of Blood	132 (77.65)	38 (22.35)	170	1.98	7.0
Recipient of HIV+Suspected	33 (42.86)	44 (59.14)	77	0.98	—
ARC/AIDS	248 (78.48)	68 (21.52)	316	3.68	—
Intravenous Drug Users	1491 (98.29)	53 (1.71)	1517	18.03	7.2
Others	661 (78.13)	185 (21.87)	846	9.86	11.0
<b>Total</b>	<b>5697</b>	<b>2879</b>	<b>8576</b>	<b>100</b>	<b>100.0</b>

Source : A Bhargava, 1992.

Note : Figures in parentheses denote % total in 'i' the category; \* Pertain to NACO 1997 Report

Seropositivity Rate in India during 1986-1992 and 1997

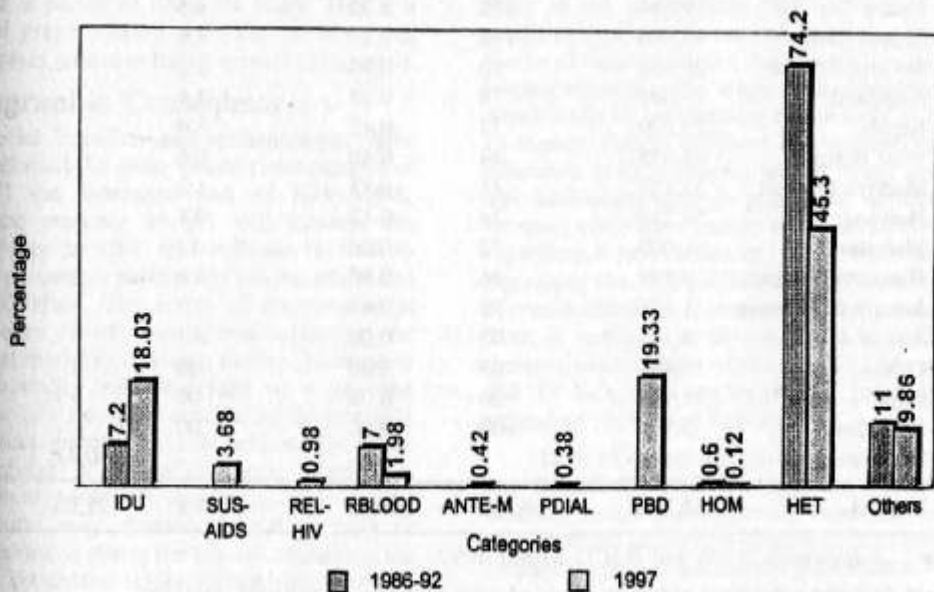
Figure 5



Source: Table 8

HIV Infected Persons during 1986-1997

Figure 6



Source: Table 7

A total of 67311 were found to be seropositive (HIV+). The seropositivity rate (per '000) was estimated to be 21.03 for India. However, vast regional variations exist within the country. Seropositivity rate continued to be highest in Manipur with 172.10 followed by Maharashtra with 102.15. The lowest was recorded in Tripura with only 0.41 only (Figure 5). Arunachal Pradesh recorded no positive case. It is important to note that up to 1992 there were

three states Orissa, Bihar and Rajasthan which had no infected persons and seven states- Karnataka, Nagaland, Madhya Pradesh, Mizoram, Assam, Bihar and Rajasthan recorded no AIDS cases. There is a possibility that this is due to the quality of surveillance (Table 8).

Most importantly, it has been revealed by the two surveillance launched by ICMR and NACO among symptomatic and asymptomatic groups respectively, that heterosexual contact,

**Table - 8**  
**HIV / AIDS patients in India during October, 1986-1992**

States/UTs	Number of Persons Screened	Number of HIV Positive	% HIV Positive Cases+	Seropositivity 1986-1992	rate # 1997	Full Blown AIDS cases
1. Maharashtra	148,716	4368	42.15	29.4	102.15	93
2. Tamil Nadu	474,064	2064	19.92	4.3	-	73
3. Manipur	10,085	1608	15.52	159.4	172.10	04
4. Delhi	203,436	658	6.35	3.2	-	27
5. Pondicherry	26,069	366	3.53	14.0	-	06
6. Uttar Pradesh	37,151	233	2.25	6.2	-	01
7. Karnataka	144,509	198	1.91	1.4	-	00
8. Gujarat	87,417	190	1.83	2.2	-	01
9. Goa	39,644	178	1.72	4.5	-	02
10. Chandigarh*	40,998	199	1.15	2.9	-	08
11. Andhra Pradesh	29,690	96	0.93	3.2	-	01
12. Nagaland	699	78	0.75	111.6	-	00
13. Kerala	23,920	73	0.42	3.0	-	14
14. West Bengal	68,055	44	0.40	0.6	-	03
15. Madhya Pradesh	33,185	41	0.23	1.2	-	00
16. Haryana	58,218	24	0.12	0.4	-	01
17. Mizoram	1,000	12	0.06	12	-	00
18. Himachal Pradesh	9,164	06	0.03	0.6	-	01
19. Jammu & Kashmir	1,106	03	0.03	7.7	-	01
20. Assam	6,189	03	0.00	0.4	-	00
21. Orissa	1,491	00	0.00	00	-	01
22. Bihar	11,167	00	0.00	00	-	00
23. Rajasthan	5,749	00	0.00	00	-	00
24. Tripura	-	-	-	-	0.41	00
<b>TOTAL</b>	<b>1,461,722</b>	<b>10,362</b>	<b>100.00</b>	<b>7.1</b>	<b>21.03</b>	<b>237</b>

Source : A Bhargava, 1992 and NACO Report 1997.

Note : \* Including Punjab + refers to share of state i among all selected states

# refers to ratio between HIV + persons in state i to persons screened in the same state per 1000.

although the weakest, has been the major mode of transmission of the infection. This is suggestive of the high degree of women's vulnerability in contracting HIV. Since the infection owes almost half its spread to tile promiscuous behaviour, women are exposed to a higher risk both as a wife and as a commercial partner. Besides, their roles as health professional and health workers too, put them at the risk of contracting the infection. Therefore, AIDS affects the lives of women beyond infection in more than one way. The impact is not just in terms of the number of them infected but also in their multiple roles. The generally low status of women within the family and the society affects their decisions regarding sex practices making them particularly susceptible to HIV infection. The subordinate role of women in society may vary in degree in different countries, but its impact is similar everywhere. This points not only to the social problems of the adult individuals but also sets a pointer towards several million children round the world who would be orphaned during 1990s consequent to the death of millions of women who would succumb to the HIV infection (Sengupta, 1990; Savara, 1992). The increase in the proportion of HIV infection through heterosexual contact during 1997 is much alarming than the corresponding picture during 1986-92, a period of about six years. This is a cause of grave concern and calls for hevisiting our premises related to Indian sexuality (Figure 6).

### **Demographic Consequences :**

Social scientists and epidemiologist alike have endorsed the most visible consequences of the STI the increased risk of HIV/AIDS. Prolonged presence of STI will increase the vulnerability to HIV and will surely lead to mortality increase, particularly among adults and young children. The levels of orphanhood at young ages (0-15) would rise reflecting the increased mortality of young parents. Increase in adult mortality will also lead to a growing incidence of widowhood considering the mortality differentials among the elderly persons. The future consequences of potentially large increase in widowhood could be staggering. The coping mechanisms may increase remarriage rates or may decrease It due to the fear of contracting the disease. Yet another important outcome would be the loss of manpower that would affect the economy.

As regards living arrangement, in most developing countries, the preference is for the coresidence of three generations. An upward pressure in young adult mortality is likely to result in arrangements where some members of the intermediate generation would be missing. The dominance of parental generation will be weakened and the relations between children and the grandparents will become stronger. Both younger and the older generation would experience economic setbacks. In the societies like ours where the joint residence of parents and grandparents is one of the adjustments that facilitates the support of and for the elderly, an increase in the young adult mortality will lead to deterioration in the efficacy of residential arrangements. Since sex differentials in mortality at older ages favour females, It is likely that those who stand to loose most are elderly women. They will not only be burdened with the care of the very young and adult but they will also experience a drastic deterioration in their control over the materials and social means to cope with it.

### **Need for Awareness :**

HIV is prolonged, physically debilitating and is often economically and emotionally devastating for the victims and their families. Most of the people with HIV are young and productive, whose illness and death deprive the family of their earner and the country of valuable human resource. The stage of development at which India is, particularly in the light of New Economic Policy, efficient and sincere health education to all in general, and to young women and adolescent girls in particular, appears to be most effective measure to create awareness regarding women's health issues. Information regarding the STI particularly HIV, its mode of transmission, its consequences and protection from it, needs to be disseminated to strike at the root cause. Much of the infection is caused due to lack of knowledge and information regarding protection against it.

Lack of or incorrect awareness, at the best and unlimited awareness regarding one's own sexuality makes girls extremely vulnerable to the risks involved in early childbearing, child rearing, frequent pregnancy and certainly, unsafe sex. What remains undone or inadequately done during childhood shows its impressions in adulthood.

General education, lessons on health care and hygiene, family life education, awareness regarding sexually transmitted infections (STIs) do not form a part of young and adolescent life of most girls. Some, although, have access to conventional education. Appropriate care during childhood and adolescence, education on health related issues particularly care and hygiene, family life education and the STI, advice on nutrition, are few steps to start with.

## Conclusion

In the social set up where decision to practice safer sex is beyond the control of women and low priority is given to their health, chances of contracting diseases, specially STIs are increased manifolds. Thus, the most probable health risk which threatens women because of little or no education and poor health conditions during

childhood and adolescence; and changing Indian sexuality, are those associated with sexual behaviour. Therefore, addressing the need of adaptability to social transition is very important.

The challenge for all concerned is to meet the priority health needs of women with the participation of women and women's organisations. Women should have access to health services including counselling and psychotherapy and most important of all, psycho-social support for decision making. The growing popularity of NGOs and the acknowledgement of their efficient and zealous work gives reasons to involve them for the purpose. Therefore, when literacy is low and health care has been and continues to, target women-the procreator and not women the 'self', the need to address women's health early in life becomes essential to make reproductive health a meaningful concept.

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## LANGUAGE SITUATION IN NAGALAND

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### Abstract

Languages of Nagas have been classified into 26 groups but 13 among them are having more than 15,000 speakers each. All these languages are mutually unintelligible and Nagamese-an impure variety of Assamese, is used as lingua-franca in order to communicate and understand people of other linguistic groups. The educated people use English - the official language of Nagaland, for this purpose. Such a situation, very likely, leads to the incidence of bilingualism and gradually to language shift. The paper attempts to study the spatial distributions of Naga languages and to determine the degree of incidence of bilingualism among them. The study of language maintenance and shift among the Nagas have also been attempted to analyse language continuance and change among them.

The study reveals that most of the tribals of Nagaland are using English, Hindi and Assamese as subsidiary languages. The highest degree of bilingualism was noticed among the Ao and Sangtam while more than 70% language shift has been recorded among the Chang and Zeliang tribes of the state.

In the absence of up-to-date data, the paper is based on the secondary data derived from the census report, 1981. Cartographic techniques have been used for drawing meaningful conclusions of the spatial analysis of linguistic situation in Nagaland.

### Introduction

The Nagas are one of the important tribes of the northeast India, with their homelands in the hills bordering Myanmar (Singh, 1994, 1). The term Nagaland an exclusive Indian territory for the Nagas, refers to the place of Nagas. Originally the word "Naga" is derived from Burmese word "naka" meaning "people with perforated ears". The Nagas who pierced their ears to accommodate big wooden plug with other ornaments, were given the name while

they were passing through the Burmese territory from southern China to the Naga hills (Nagaland Post, 1988). Nagas form a distinct Mongoloid stock and speak languages that belong to the Tibeto-Burmese linguistic group. There are 13 major tribes, namely Angami, Ao, Chang, Chakhesang, Kheimnugun, Konyak, Lotha, Phom, Rengma, Sangtam, Sema, Yimchungre and Zeliangrong.

The state of Nagaland is divided into seven districts : Kohima, Phek, Mokokchung, Wokha,

Tuensang, Zunheboto and Mon. The terrain is hilly, rugged and mountainous with average height of peaks between 900 and 1200 meters. Rainfall is heavy in Nagaland between 175 cms and 250 cms. Most of the rains pour down during the four months from June to September (Bhakta, 1992, 202-212).

Total population of Nagaland, as per 1991 census is about 12.16 lakh. The state recorded the highest population growth of 56.86 per cent during 1981-91, among all the states of India. The density of population was 73 persons per sq. km. and literacy 61.3 per cent.

Naga villages are generally built on a commanding position which, quite often, happened to be on the top of a hill. The selection of site was largely influenced by considerations of defensive strategy.

Linguistically, Naga languages belong to Assam-Burmese branch of Tibeto-Burman sub-family. Linguistic situation of Nagaland is marked by numerous complicated dialect variations. The dialect differs from village to village and in earlier days men and women in the same household, sometimes, had to use different forms of speech. Among the southern Angami (Zounuo-Keyhonuo) kinship terminology differs among different minorities (Tepa & Theno). There is, however, a general similarity existing in the Naga languages and dialects defined by Elwin (1961) but after in-depth studies, he reclassified them placing the majority of them in what he calls the Burmese division and a small number in the basic division of the Tibetan tongues.

The Naga languages have been put down to Roman Scripts. In Angami, Ao and Sema languages, a good literature exists particularly pertaining to text books and religious books. In India, today, Naga languages have limited socio-economic functions. They are essentially an in-group languages used by own section of the same community for a limited communication. Naga languages have even very restricted functions for those who are settled in towns and are educated. It is used, perhaps,

by a few for communications with members of the older generations.

## Distribution of Major Linguistic Groups

According to Grierson's classification, the Naga languages may be divided into three groups, the Western, the Central and the Eastern groups. The Western group comprise Angami, Sema, Rengama, Chakhesang and Zeliang languages. The Central group includes Ao, Lotha and Phom languages; while Chang, Konyak, Yimchungre, Sangtam and Khiemnugun languages may be classified into the Eastern group. (Singh, 1995, 56).

### The Western group

Angami, originally known as Tengima, is a dominant linguistic group in the state. The Angami region broadly forms the present day Kohima district of Nagaland. The Angami are divided into three territories - western, northern and southern. Tengima and Chakroma occupied the western part of the district while Zuonuo-Keyhonuo are found in the southern part. The northern part of Kohima is occupied by northern Angami. The Angami territory forms an irregular plateau with numerous peaks and ridges. Among them Japfu and Ezupu are important peaks. The Angami practice terrace cultivation.

The Sema are semi nomadic groups and are scattered all over the state. They are mainly concentrated in the Zunheboto district. The Sema territory is mostly hilly and their main habitat is concentrated between 1500 mts. and 2000 mts. Unlike Angami, the Sema are still continuing Jhuming cultivation except those who have settled in and around Dimapur.

The Rengma are concentrated in the Tseminyu sub-division of Kohima district. They occupy the spur of the ridge running from Nidzokru hill to Wokha hill. Rengma practice Jhuming cultivation.

The Chakhesang have occupied the highest elevated terrain, the Phek district. The



Chakhesang may be classified into two sub-groups : Chakhru and Kheza. Both these ethnic segments are very close to Angami Naga in terms of their culture including language and in Terrace cultivation.

The term Zeliang is coined by combining two words 'Ze' and 'Liang', representing two tribal names, 'Zemi' and 'Liangmei'. They live primarily in the south-western part of Kohima district including Jhaluke, Peren and Medziphima sub-divisions. The landscape consists of rolling mountain in the central part and undulated terrain in the south. The northwestern portion descends to merge with the plains of Dhansiri valley of Assam, in which higher concentration of Nagas are found. Zeliang practice both terrace cultivation in the hilly region and sedentary cultivation in the plain areas.

### **The Central group**

The Ao are one of the major tribes of Nagaland highly concentrated in Mokokchung district. There are three main sub-groups : Chongli, Mongsen, Changki. The Ao region consists of four main unbroken parallel hill ranges, such as Langbangkong, Asukong, Changkikong and Chapvukong. Ao region is covered with huge forest lying between the foothills and the cultivated land. The region consists of numerous streams and rivers. Important among them are the Melak and the Tsurong. Basically, Ao are Jhum cultivators.

The Lotha, another major Naga tribe, prefer to live in higher altitude of Wokha district. The district comprises of mountainous terrain with average height of 200 metres above sea level. The climate varies from cool to very cold during winter. The Lotha are also practicing Jhuming cultivation.

The Phom are spread over Tuensang district of Nagaland. The whole district falls on the north-western sub-ranges of Patkai and comprises of three hills with deep valleys. The two important rivers Dikhu and Yungnon approximately demarcates the Phom territory

from the eastern sides respectively because of very high altitude. The region round the year is covered with foggy weather and dense sub-tropical forests.

### **The Eastern Group**

The Konyak are the major tribes of Nagaland, they are highly concentrated in Mon district but a significant proportion of Konyak are also found in Tuensang district. The district encompasses hilly and rugged topography in southern part while the northern part is more or less a plain area, touching the alluvial landscape of Bhramahputra valley.

The Chang are a lesser known tribe of Nagaland. The central part of Tuensang district is considered as the home of the Chang. The Chang preferred to move and live at 5000 ft. of the Saramati peak and practice Jhuming cultivation.

The Yimchungre another lesser known Naga tribe are scattered in nine circles of Tuensang district. They have basically occupied hilly rugged and precipitous area of the district and practice Jhuming cultivation.

The Khiemnugun happen to be one of the smaller group of Naga tribes. They are distributed in the six ranges in the eastern part of Tuensang district of Nagaland, while the remaining half of the total Khiemnugun are found across the border in the Burmese territory. Almost the entire Khiemnugun people occupy the hilly parts of the district ranging from 3000 mt. to 4000 mt. above the mean sea level.

The Sangtam are one of the major tribes of Nagaland. All the Sangtam villages fall within Tuensang district of Nagaland. A few of them are also found in the Kiphire sub-divisions and Chare circle of Phek district. Primarily they are Jhum cultivators (Figures 1 and 2).

### **Bilingualism**

Nagaland with a small population has a considerable linguistic heterogeneity. There are as many as twenty-five languages besides hundreds of dialects which vary, sometimes

**Table-1**  
**Bilingual Population and their percentage**

Name of the Scheduled Tribe	Total Speakers	Total Number of Bilinguals	Percentage of The Number of
Angami	62,555	22,514	35.99
Ao	104,578	41,876	40.04
Chakhesang	60,771	17,144	28.21
Chang	22,375	5,878	26.27
Khiemnugun	18,080	2,418	11.88
Konyak	83,652	14,886	17.80
Lotha	58,030	21,533	37.11
Phom	24,427	6,486	26.55
Rengma	15,313	5,876	38.33
Sangtam	29,016	12,275	42.30
Sema	95,312	27,428	39.27
Yimchungre	22,085	5,813	26.36
Zeliang	21,085	6,009	28.50
Unclassified	949	418	44.05

*Source* : Census of India 1981, Special Table for Scheduled Tribe on Mother tongue and Bilingualism, Part IX (ii).

**Table-2**  
**Language Shift among the Nagas**

Tribe	% of language change	Level of language change
Zeliang	76	Very High
Chakhesang	73	Very High
Angami	36	High
Konyak	10	Medium
Yimchungre	7	Low
Ao	5	Low
Khiemnugun	5	Low
Sangtam	4	Very Low
Chang	3	Very Low
Lotha	2	Very Low
Rengama	2	Very Low
Phom	1	Very Low
Sema	1	Very Low

*Source* : Census of India 1981, Special Table for Scheduled Tribe on Mother tongue and Bilingualism, Part IX (ii).

Figure 1

**NAGALAND  
First Ranking Languages  
1981**

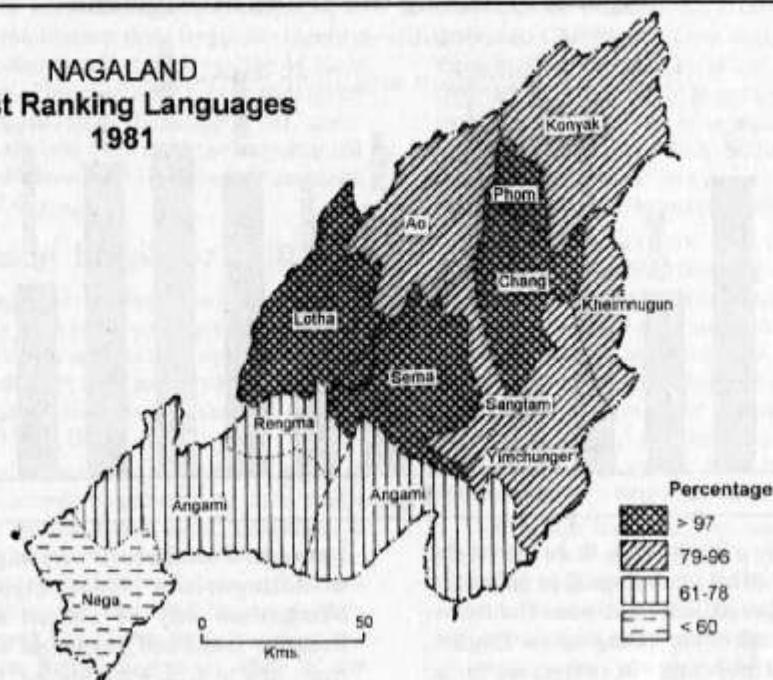
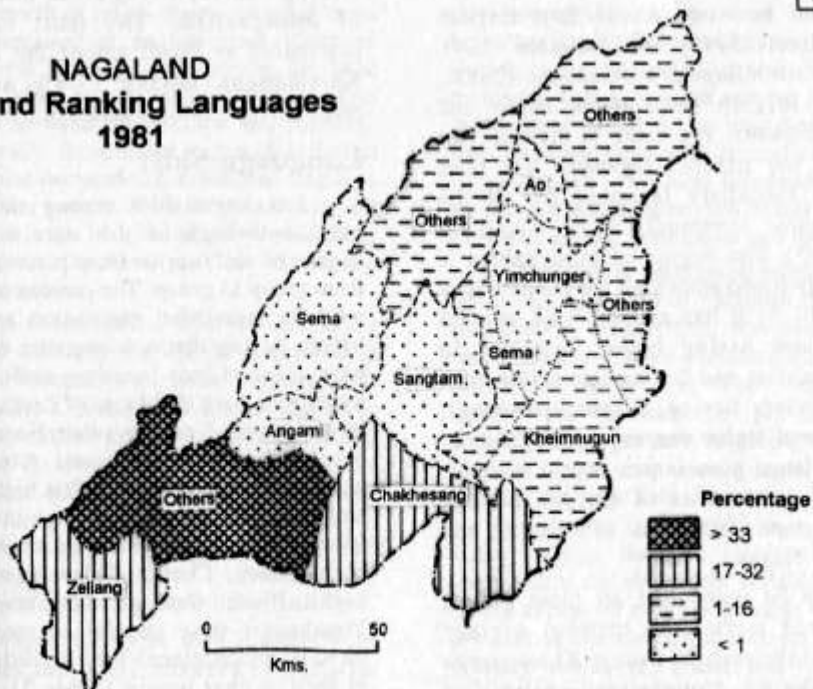
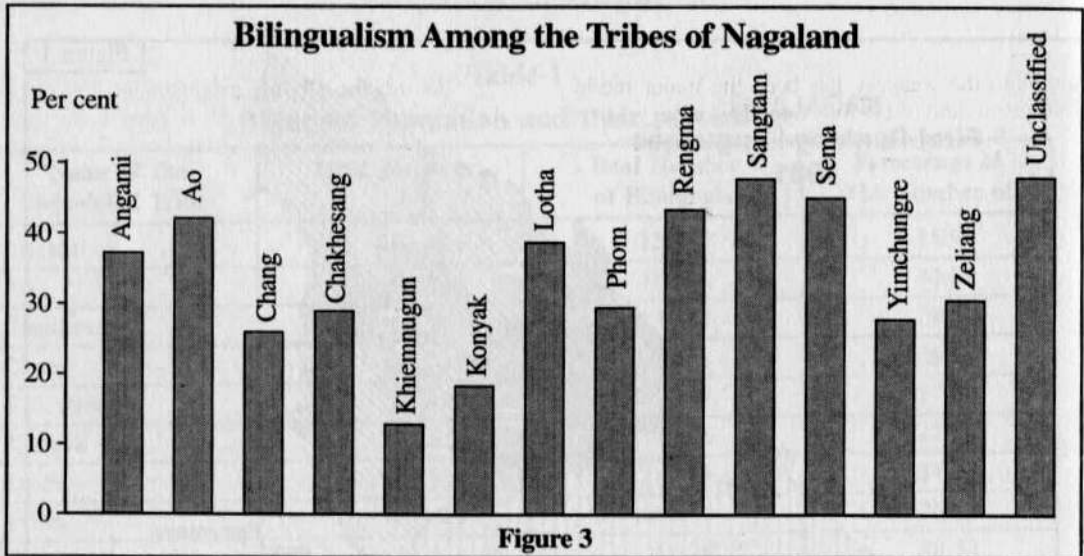


Figure 2

**NAGALAND  
Second Ranking Languages  
1981**





from village to village. It is to be noted that while the non-tribal are bilingual in only other than languages, of Indo-Aryan family or English, the tribal are bilingual in English, Assamese, Hindi and in adjacent tribal languages. For example, the Angami speakers are bilingual in Assamese (8029), English (17331), Hindi (5444) and Sangtam (114). The Chang are bilingual in Assamese (2882), AO (858), English (64), Hindi (486) and Yimchungre (469). The same is the case for the rest of the tribals. Nagamese has been claimed as subsidiary language by all the thirteen major communities of Nagaland (Singh, 1993). The degree of bilingualism is not uniformly found among all the communities of Nagaland. As it has already been pointed out that those having higher exposure to market, education and having interaction with their neighbours having different language, have registered higher degree of bilingualism. As per the latest government record it varies from 17.8% in the case of Knoyak to 42% among Sangtam while it is 44% among the unclassified Nagas.

It is to be noted that all these groups have declared more than national average (13.4%) of bilingualism except Khiemnugun (11.88%). The Ao, Sangtam and unclassified

Nagas have declared a very high percentage of bilingualism while high degree of bilingualism may be noticed among Sema, Rengma, Lotha and Angami in which it varies from 30% to 40%. Chakhesang, Chang, Phom, Zeliang and Yimchungre had medium degree of bilingualism. The least bilingualism population as found among the Konyak and Khiemnugun having 17.8% and 11.88% respectively (Table 1 and Fig. 3).

### Language Shift

Language shift among the Nagas is noticed throughout the state although the degree of shift varies from place to place and from group to group. The process of interaction with the non-tribal population and with the tribals having distinct language of their own have resulted into language shift. It is to be mentioned here that in most cases, the shift is in the form of one or other Naga languages besides English, Hindi and Assamese. The magnitude of language shift is high in Zeliang and Chakhesang while it is high in the Angami tribe. On the other hand, the remaining tribes such as Ao, Chang, Khiemnugun, Konyak, Lotha, Phom, Rengma, Sangtam, Sema and Yimchungre have maintained their linguistic identity and declared their traditional dialect as their mother tongue (Table 2).

It is to be noted that majority of the tribal groups have maintained their linguistic identity by declaring their traditional language as their mother tongue. There are only two communities in which more than two-thirds of their population switched over from their traditional tongue and declared non-traditional language as their mother tongue.

### Correlates of Linguistic Shift

Language shift does not take place independently or in isolation rather it depends on a number of factors such as urbanisation, literacy, change of work force from primary to non-primary sectors, change in traditional belief and age-sex etc. (Ishtiaq 1999, 107).

Literacy is the most important vehicle of social and economic transformation. It is found that in most of the tribal areas, education is imparted in non-tribal (regional) languages. Consequently most of the educated tribals are switching over to the non-tribal languages. It is therefore argued that higher literacy among the tribals lead to higher degree of shift in the language.

The growth of urban centres in tribal areas has been regarded as an important factor in bringing about language shift among the local people. In other words, there exists a direct relationship between urbanisation and language shift. Secondly, those tribes migrated to Urban areas have also declared non-traditional language as their mother tongue. It is, therefore, assumed that the percentage of tribal population residing in urban areas may have positive relationship with language shift.

Change of occupation from primary to the non-primary economy has also been considered an important factor to bring about language shift among the tribals. It has been noticed that those tribals who work in the secondary and tertiary sectors have developed a close contact with the non-tribals and adopted the non-tribal language. It is, therefore, expected that percentage of tribals engaged in the non-primary economic activities may have a positive relationship with the language shift among the tribal population.

Conversion of tribal to Christianity or Hinduism has also been considered an important factor to bring about language shift. A large

section of the tribals of north-eastern India, who embraced Christianity, have declared English as their mother tongue. In other parts of India they adopted regional language as a result of embracing Hinduism. It is assumed here that the conversion from their traditional belief to modern religions may have a positive relationship with language shift.

Age and sex are the two important demographic variables bringing about language shift among the tribals. It is noticed that younger and adults welcome to such change while the older people give importance to their traditional culture and language. Similarly males preferred change more than their counterparts. It is, therefore, expected that male and people below 45 years of age group may have a positive relationship with language shift.

It is also found that economically well-off tribals are more inclined to many social changes including language as in order to maintain higher status in their society. It is, therefore, argued that higher per capita income may have higher degree of language shift among the tribals.

A number of factors bring about language shift among the Naga tribal groups. Some important among them are literacy, urbanisation, workforce in non-primary sectors, change in traditional belief, age and sex etc. A total of six independent variables (xs) have been selected to find out relationship with dependent variable i.e. language shift (y). These independent variables are literacy, urbanisation, non-primary work force, Christianity, male population and older people.

The result of correlation matrix reveals that out of six independent variables, four of them (i.e. literacy, urbanisation, non-primary workers and Christianity) have a positive correlation with dependent variable (y). The remaining two independent variables (i.e. per cent of male population and per cent of people of more than 60 years of age group) have a negative correlation with the language shift. The values of correlation coefficients vary from -0.207 to + 0.604. These value indicate that the relationship between independent and dependent variables is not very strong except for two independent variables (i.e. per cent of literate people and per cent of non-primary workers). These two variables are significant at 90% level of confidence. The other

independent variables are not very significant and have a weak coefficient value.

From the above result one may conclude that literacy and urbanisation have emerged as strong force for switching over from traditional language to non-traditional language or language shift. The other variables such as Christianity and urbanisation are also positively correlated with language shift but they are not significant and their coefficient values are weaker.

## Conclusions

The state of Nagaland has many languages and their distinct speeches belong to the Tibeto-Burman language family. Linguistic heterogeneity in Nagaland having a small population is because of its mountainous topography which restricted interaction between people of one group with another. Nagamese is used as lingua franca in the state. English being the religious and the state official language of Nagaland has gained popularity and has been declared as subsidiary language by a significant proportion of population.

Bilingualism in urban areas is due to academic, administrative, trade and commerce and institutions of other activities while in rural areas Christian Missionaries are also responsible for higher incidence of bilingualism. This phenomenon is found in both urban and rural areas, unlike the plains of India where it is mostly concentrated in urban centres. Language shift is a universal phenomenon and is taking place among all the Nagas but its magnitude varies from tribe to tribe and within the same tribal group. Out of the total, three of them (Zeliang, Chakhesang,

Angami) have shown higher degree of language shift. On the other hand, the remaining tribal groups have shown a higher order of language maintenance.

The tribal languages of Nagaland are at different stages of development. A large number of them are dialects of different clans of tribe. What future course of development hold for them will be very difficult to predict. The Christian missionaries did some pioneering works in creating literature for these dialects with Roman script since the last few decade. Government officials also undertook the task of preparing text books both in English and other regional languages. In addition, some organisations have also taken up in the right earnest to the work of creating and developing literature in their own languages. Efforts are going on but the outcome is far behind the expectation. One of the reasons is perhaps due to insurgency and insecurity which the people of the state are facing. Nevertheless, the Naga languages represent a vast relic of past cultural heritage in the form of oral tradition and folklores and must not be allowed to destroy, rather effort must be made to preserve this old pristine heritage through some effective measures (Mazumdar, 1970, 63).

## Acknowledgment

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## AGEING IN SINGAPORE - A POPULATION PROJECTION : 1990-2030

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### Abstract

More than a quarter of all Singaporeans will be aged 60 years and over by the year 2030 and many of them will live longer than their parents. Detailed projections of the elderly population are significant for policy planners and researchers. This paper projects the future aged population for the year 2030, by census divisions using the Forward Survival Method' as explained by Shryock and Siegel (1976). Projections revealed that the elderly population of Singapore was expected to increase from about 253 thousand in the year 1990 to about 1994 thousand in the year 2030. The population of elderly females is projected to increase from about thousand to about 644 thousand during the period 1990-2030, while that of the males is expected to increase from about 117 thousand to about 550 thousand during the same period. All the constituencies of Singapore are expected to have an increase in the number of elderly persons. The eastern region will have the highest increase followed by the north central and the western region in that order. This is expected to have implications in the location of health care services and facilities, special housing and transportation for the elderly in future.

### Introduction

Singapore is a small country having a resident population of about 2.705 million people, of which 9.1 per cent is in the elderly (60 years and over) age group (Shantakumar 1994, p. 6). In Singapore there was a rapid decline in the fertility rate from 5.8 in 1960 to 1.8 in 1980, and it has further declined to 1.6 in 1997 (Department of Statistics, 1999, p. 23). On the other hand, the life expectancy at birth for males and females had risen from about 62 and 65 years in 1960 to about 69 and 74 years in 1980, respectively (United Nations, 1993, p. 505). Since then, the life expectancy

at birth has further increased for males and females to 77.1 and 79.2 years in 1997, respectively (Department of Statistics, 1999, p. 10). Therefore, the size of the elderly population in Singapore has been increasing at a fairly high rate and is estimated to cross the 25 per cent mark by the year 2030 (Singh, 1996, p. 13). In fact, it is projected that Singapore's population will be one of the fastest ageing populations in the world (Ministry of Health, 1999, p. 17). This demographic change will have serious implications for planning for every aspect of life in the future.

Singapore's rapidly ageing population has drawn the attention of politicians, policy planners, demographers and other researchers. However, there is a dearth of detailed projections of the elderly population in Singapore. For example, the available projections (Shantakumar, 1994; Singh, 1996; Ministry of Health, 1999) do not provide detailed data by parliamentary constituencies. A parliamentary constituency is the spatial unit for which the census data is available in Singapore. The availability of detail by constituencies is very significant for policy planners and researchers. For example, the spatial distribution of the elderly will be helpful for the social scientists and policy makers to explore the spatial variations and locational factors in the establishment and size of facilities such as housing, nursing homes, rehabilitation and day care centres, fitness centres and elderly-friendly transportation for the future elderly in Singapore. Studies done elsewhere emphasise the importance of location of facilities and the accessibility problems for the disabled populations (Dear, 1978; Hunter et al., 1986; Barnes, 1991; Dear, 1997; Imrie and Kumar, 1998). Therefore, there is a need for projecting the aged population, by constituencies. The time period of projections is also of importance because the projections should be able to provide the data to policy makers and planners well in advance for putting in place the required health care services and facilities (Singh, 1996). Rodgers et al. (1989) propose that it is necessary for efficient planning that the governments should obtain the projections at least twenty years in advance. Since the most recent data available on the population of the elderly by parliamentary constituency, is the census data for 1990. Therefore, the objective of this paper is to project the aged population in Singapore during the period 1990-2030.

## Methodology

The future aged population for the year 2030, by census divisions, was projected using

the 'Forward Survival Method' as explained by Shryock and Siegel (1976). It was assumed that the younger generations will grow old in the same areas where they were living in 1990. This assumption is likely to hold good because the effects of internal migration in Singapore are expected to nullify each other. It is worth mentioning here that the government plans and controls the size and location of the residential areas in Singapore to a large extent. Therefore, there are no natural spatial patterns of population distribution. The patterns are essentially governed by the government's decision to plan new housing blocks or a new town in an area. The size of the land in Singapore is very small and it is highly unlikely that the government control over land will ease in future. Therefore the relative number of residences available in various constituencies is likely to remain almost the same unless and until there is some government plan to put more people in a particular region. Therefore, the total population of a constituency is not likely to be affected too much by migration of people from one constituency to another. The survival rates provided in the United Nations Demographic Yearbook 1996, were used to survive a cohort for the next forty years. For example, those in the 20-25 year age group in 1990 were survived till they reached 60-65 year age group in 2030. Similarly, those who were 55-60 year old in 1990 were survived to 95-100 year age group in 2030.

It is important to point out here that for the year 1990, the Census of Population, Singapore, does not provide data by five-year age group for 60 years and over population, by parliamentary constituencies. Therefore it becomes very difficult to estimate the growth of the elderly population for the 1990-2030 period, by parliamentary constituencies, by five-year age group. Secondly, even for the 0-60 years, the Census also does not provide data on 'resident population' by five-year age group in various parliamentary constituencies. Therefore the 'total population' by five-year



age group, by parliamentary constituencies for 0-60 years had to be used for population projections for the year 2030. This may cause distortion in the projection of the future aged population because there is a significant number of foreigners residing in Singapore and their proportion varies in various constituencies.

### Patterns of Elderly Population : 1990

In the year 1990, there were about two hundred and fifty-four thousand elderly in Singapore (Table 1). The 60-64 year age group

accounted for the highest number of the elderly, followed by 65-69, 70-74, 75-79 and 80 years and over age group, in that order. A look at the sex composition of the total elderly population (Table 1) reveals that the number of elderly females (136,438) was far higher than that of the males (117,471). The number of elderly was the highest in 60-64 year age group and the lowest in 80 years and over age group for both males and females.

The number of elderly females was higher than that of the males in all the age groups. The difference in the number of elderly males

**Table-1**  
**Actual and Projected Elderly Population, by Age and Sex, Singapore, 1990 and 2030**

Age group	Males			Females			Persons		
	1990	2030	Growth	1990	2030	Growth	1990	2030	Growth
60-64	42068	135290	93222	43172	146470	103298	85240	281760	196520
65-69	29979	140086	110107	31435	152999	121564	61414	293085	231671
70-74	20859	119721	98862	25364	137604	112240	46223	257325	211102
75-79	14137	81417	67280	19021	99339	80318	33158	180756	147598
80 +	10428	73672	63244	17446	107519	90073	27874	181191	153317
Total 60 +	117471	550186	432715	136438	643929	507491	253909	1194115	940206

*Sources of Data :* Census of Population, 1990 and Projections based on the Census of Population, 1990, Singapore

and elderly females was the maximum in 80 years and over age group, followed by 75-79, 70-74, 65-69 and 60-64 year age group in that order. The number of elderly females exceeded that of the males by at least about one thousand in all the age groups. The difference in the numbers in 80 years and over age group was more than six times of the difference in 60-64 year age group.

The Aljunied constituency had the highest number (11,178) of the elderly while Boon Lay had the lowest (1,702) of the same, in the year 1990 (Table 2). All the constituencies of Singapore had at least two thousand elderly,

except Boon Lay and Whampoa. There were five constituencies that had more than ten thousand elderly each. Figure 1 presents a detailed map of the spatial patterns of elderly population in Singapore in 1990. However, Singapore may be divided into mainly three types of areas on the basis of the elderly population in the year 1990 :

- Areas with high elderly population (more than 7,000 persons)
- Areas with low elderly population (less than 4,000 persons)
- Areas with moderate elderly population (4,000 to 7,000 persons)

### **Areas with High Elderly Population (more than 7,000 persons)**

Table 2 reveals that in 1990, there were ten constituencies that had more than seven thousand elderly persons each. Amongst these, Aljunied, Eunos, Jalan Besar, Marine Parade, and Tiong Bahru had an elderly population of more than ten thousand. Another three constituencies, Pasir Panjang, Tampines and Toa Payoh had more than eight thousand elderly. Brickworks had the lowest number (7,557) of the elderly in this group. All these are group representative constituencies (GRCs) which have bigger total populations, therefore, it is natural that these had high numbers of the elderly.

### **Areas with Low Elderly Population (less than 4,000 persons)**

In 1990, there were thirty-five constituencies, which had less than 4,000 elderly persons (Table 2). However, all these have an elderly population of not less than two thousand persons, with the exception of Boon Lay and Whampoa. Among these, Kallang had the highest number (3,861) of elderly. Within this category, there were thirteen constituencies that had more than three thousand elderly persons. These are the constituencies having a smaller total population, therefore they have low numbers of the elderly. A majority of these constitute the older settlement areas of Singapore.

### **Areas with Moderate Elderly Population (4,000 to 7,000 persons)**

The remaining ten constituencies fall in this category. Within this category, Cheng San had the highest number (6,777) of elderly persons while Serangoon Gardens had the lowest (4,161) of the same (Table 2). However, within this category, Cheng San, Long Kah, Sembawang and Bukit Panjang had an elderly population of more than six thousand. Another four constituencies in this group had between five to six thousand elderly persons.

Thus, it may be said the eastern region of Singapore had the highest elderly population, followed by the south central, north central and the western region, in that order (Figure 1). Aljunied constituency also had the highest number (6,230) of elderly females whereas Boon Lay had the lowest number (867) of the same (Table 2). However, Jalan Besar constituency had the highest number (5,754) of elderly males whereas Yio Chu Kang had the lowest number (786) of the same. The spatial patterns of the male and female elderly populations follow that of the total elderly population, with a few exceptions.

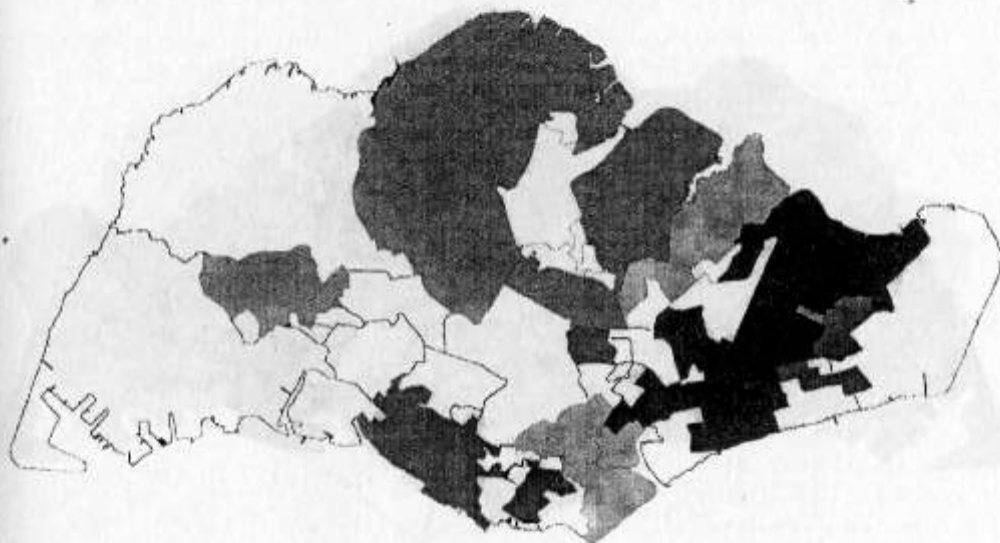
### **Patterns of projected elderly population : 2030**

Singapore's elderly population is expected to be about 1,194 thousand in the year 2030, which is about 4.7 times of that in the year 1990 (Table 1). The 65-69 year age group is expected to account for the highest number of the elderly, followed by 60-64, 70-74, 75-79 and 80 years and over age group, in that order. The difference in the number of elderly males and females is expected to increase further. The number of elderly females is expected to exceed that of the males by about ninety-four thousand in 2030 as compared to about nineteen thousand in 1990 (Table 1). It is also projected that the difference in the number of elderly females and males will exist in all the age groups. The difference in the number of elderly males and females is projected to be the maximum in 80 years and over age group and the minimum in 60-64 year age group. In all the age groups the number of elderly females is projected to exceed that of the males by at least about eleven thousand.

In the year 2030, the Eunos constituency is expected to have the highest number (63,923) of elderly persons while Whampoa is expected to have the lowest number (7,051) of the same (Table 2). Each of the constituencies is projected to have at least nine thousand

## Elderly Population, Singapore, 1990

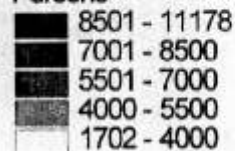
Data by Parliamentary Constituencies



3 0 3 6 Kilometers



Persons



Source of Data: Census of Population, Singapore, 1990.

Fig. 1

## Projected Elderly Population, Singapore, 2030

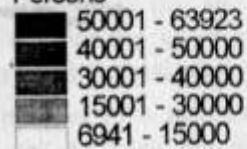
Data by Parliamentary Constituencies



3 0 3 6 Kilometers



Persons



Source of Data: Projections based on Census of Population, Singapore, 1990.

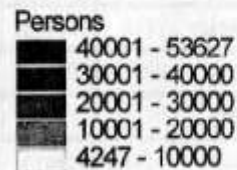
Fig. 2

## Projected Growth of Elderly Population, Singapore, 1990 - 2030

Data by Parliamentary Constituencies



3 0 3 6 Kilometers



Source of Data: Projections based on Census of Population, Singapore, 1990

Fig. 3

Table-2

Actual and Projected Elderly Population, by Parliamentary Constituency and by Sex, Singapore, 1990 and 2030

Parliamentary Constituency	Males			Males			Males		
	1990	2030	Growth	1990	2030	Growth	1990	2030	Growth
ALUJUNIED GRC	6230	28348	22118	4948	21827	16879	11178	550176	38998
BEDOK GRC	4212	19023	14811	3702	15115	11413	7914	34139	26225
BRICKWORKS GRC	3849	11616	7767	3708	10225	6517	7557	21841	14284
CHENG SAN GRC	3766	19667	15901	3011	16682	13671	6777	36349	29572
EUNOS GRC	5798	34885	29087	4498	29038	24540	10296	63923	53627
HONG KAH GRC	3743	25275	21532	2913	22324	19411	6656	47599	40943
JALAN BESAR GRC	4872	16746	11874	5754	16755	11001	10626	33501	22875
MARINE PARADE GRC	6157	22760	16603	5010	17605	12595	11167	40365	29198
PASIR PANJANG GRC	4450	25574	21124	3779	20604	16825	8229	46178	37949
SEMBAWANG GRC	3567	26573	23006	3165	25284	22119	6732	51857	45125
TAMPINES GRC	4725	25968	21243	3396	20435	17039	8121	46403	38282
TIONG BAHRU GRC	5549	16920	11371	4788	14090	9302	10337	31010	20673
TOA PAYOH GRC	4488	15173	10685	4003	12350	8347	8491	27523	19032
ANG MO KIO	1633	7334	5701	1417	6142	4725	3050	13477	10427
AYER RAJAH	1316	9294	7978	1140	8799	7659	2456	18093	15637
BOON LAY	867	7468	6601	835	9702	8867	1702	17170	15468
BRADDEL HEIGHTS	1971	10813	8842	1374	7908	6534	3345	18721	15376
BUKIT BATOK	1564	9649	8085	1143	7762	6619	2707	17411	14704
BUKIT GOMBAK	1639	10058	8419	1375	8341	6966	3014	18399	15385
BUKIT MERAH	1475	3622	2147	1219	3319	2100	2694	6941	4247
BUKIT PANJANG	3188	20483	17295	3254	19000	15746	6442	39483	33041
BUKIT TIMAH	1834	10342	8508	1423	8013	6590	3257	18355	15098
BUONA VISTA	1299	5304	4005	1185	3995	2810	2484	9299	6815
CAIRN HILL	2613	11161	8548	2467	8010	5543	5080	19171	14091
CHAANGI	1669	9923	8254	1521	12528	11007	3190	22451	19261
CHUA CHU KANG	1354	8640	7286	1255	9980	8725	2609	18620	16011
FENGSHAN	1203	5454	4251	1083	4643	3560	2286	10096	7810

Parliamentary Constituency	Males			Males			Males		
	1990	2030	Growth	1990	2030	Growth	1990	2030	Growth
HOUGANG	1789	7872	6083	1471	6479	5008	3260	14351	11091
JURONG	1831	14915	13084	1879	18624	16745	3710	33539	29829
KALLANG	2141	7311	5170	1720	6125	4405	3861	13436	9575
KAMPONG GLAM	2087	5269	3182	2838	5810	2972	4925	11079	6154
KEBUN BARU	1649	7702	6053	1474	6254	4780	3123	13957	10834
KIM KEAT	1616	5882	4266	1352	5098	3746	2968	10980	8012
KIM SENG	1875	4594	2719	1616	4438	2822	3491	9032	5541
KRETA AYER	2552	5266	2714	2512	6004	3492	5064	11270	6206
LENG KEE	1896	6050	4154	1736	5362	3626	3632	11412	7780
MACPHERSON	1544	5079	3535	1430	4376	2946	2974	9455	6481
MOULMEIN	2064	7589	5525	1422	6346	4924	3486	13934	10448
NEE SOON CENTRAL	1354	10329	8975	1119	8629	7510	2473	18958	16485
NEE SOON SOUTH	1575	11316	9741	1169	9247	8078	2744	20563	17819
PAYA LEBAR	22001	8860	6859	1525	7329	5804	3526	16189	12663
POTONG PASIR	1774	7249	5475	1333	5592	4259	3107	12840	9733
PUNGGOL	2619	14793	12174	2420	12780	10360	5039	27574	22535
SERANGOON GARNDENS	2387	10312	7925	1774	7306	5532	4161	17618	13457
SIGLAP	1805	8805	7000	1361	5189	3828	3166	13994	10828
TANGLIN	1940	10727	8787	1696	6988	5292	3636	17716	14080
TANJONG PAGAR	1797	5822	4025	1584	5408	3824	3381	11230	7849
TECK GHEE	1115	5704	4589	974	4501	3527	2089	10205	8116
TELOK BLANGAH	1392	6143	4751	1254	4999	3745	2646	11142	8496
THOMSON	3291	16797	13476	2286	12179	9893	5577	28947	23370
ULU PANDAN	2051	10055	8004	1642	6270	4628	3693	16325	12632
WHAMPOA	1291	3609	2318	1308	3442	2134	2599	7051	4452
YIO CHU KANG	1038	6138	5100	786	4804	4018	1824	10942	9118
YUHUA	1340	6800	5460	996	5739	4743	2336	12539	10203

*Sources of Data* : Census of Population, 1990 and Projections based on  
the Census of Population, 1990, Singapore

elderly persons, with the exception of Whampoa and Bukit Merah. Seven Constituencies are expected to have an elderly population of more than forty thousand. Figure 2 presents a detailed choropleth map of the spatial distribution of the projected elderly population in various constituencies in the year 2030. However, with a view to describe the broad spatial patterns of the elderly population for the year 2030, Singapore may be divided into mainly three types of areas :

- Areas with high elderly population (more than 30,000 persons)
- Areas with low elderly population (less than 15,000 persons)
- Areas with moderate elderly population (15,000 to 30,000 persons)

### **Areas with High Elderly Population (more than 30,000 persons)**

Thirteen constituencies are expected to have more than thirty thousand elderly persons in the year 2030 (Table 2). However, in this group, Aljunied, Eunos, Hong Kah, Marine Parade, Pasir Panjang, Sembawang and Tampines are expected to have more than forty thousand elderly persons. All the seven are group representative constituencies (GRCs), which had bigger size of younger population in 1990. Tiong Bahru is expected to have the lowest number (31,010) of elderly persons in this category. It should be noted that Brickworks and Toa Payoh, which were among the areas of high elderly population in the year 1990, have moved out of this category. On the other hand Cheng San, Hong Kah, Sembawang, Bukit Panjang and Jurong have moved in this category from the areas of moderate elderly population in 1990. Hence, a majority of these constituencies are the same as those that had a high elderly population in the year 1990. The only difference is that they are expected to have much higher numbers of elderly persons in 2030. Therefore, the eastern region will continue to have the biggest share of the elderly population in the year 2030 (Figure 2).

### **Areas with Low Elderly Population (less than 15,000 persons)**

This category is expected to have twenty-three constituencies in 2030. However, even these constituencies are expected to have at least about seven thousand elderly (Table 2). These numbers are only relatively low and not really small. Within this group, Hougang is expected to have the highest number (14,351) of elderly persons. In this category, eight constituencies are expected to have more than twelve thousand elderly persons. A majority of these constituencies form the older settlement areas in the southern and central region of Singapore. In the year 2030, these regions are projected to have relatively low elderly population due to the continuous migration of the younger generations to the new towns in the past decades.

### **Areas with Moderate Elderly Population (15,000 to 30,000 persons)**

In the year 2030, nineteen constituencies are expected to have an elderly population of 15-30 thousand persons (Table 2). Within this category, Thomson is expected to have the highest number (28,947) of the elderly while Paya Lebar is expected to have the lowest (16,189). Within this category, Brickworks, Toa Payoh, Changi, Nee Soon South, Punggol and Thomson are expected to have more than twenty thousand elderly persons.

Thus, it may be deduced that in the year 2030, the eastern region is projected to continue to have the highest concentration of elderly population, followed by the north central and the western region (Figure 2). Plus compared to the year 1990, there is a general shift in the elderly population from the south central region in 1990 towards western and north central regions in 2030. This is mainly because the south central region forms one of the oldest settlement regions of Singapore and the younger generations have been moving to the new



settlement areas during the past decades. The spatial patterns of male and female population will almost be the same as that of the total population, with a few exceptions. Eunos constituency is expected to have the highest population of both the elderly females and males (Table 2). However, Whampoa constituency will have the lowest population of elderly females whereas Bukit Merah will have the lowest population of elderly males.

### **Patterns of projected increase in the number of elderly persons : 1990-2030**

Nearly 940 thousand persons are expected to be added to the elderly population during the period 1990-2030 (Table 1). The 65-69 year age group is expected to have the biggest increase in the number of the elderly, followed by that in the 70-74, 60-64, 80 years and over and 75-79 age groups in that order. However, all the age groups are going to have an increase of at least about fourteen thousand in the number of elderly persons. The population of elderly females is projected to increase by about 507 thousand while that of the males is expected to increase by about 433 thousand. The increase will be the highest in the 65-69 year age group for both the females and the males.

Among the various constituencies in Singapore, Eunos is expected to record the highest growth (53,627) in the number of elderly during the period 1990-2030 (Table-2). On the other hand, Bukit Merah is projected to have the lowest increase (4,247) in elderly population. All the constituencies are expected to have an increase of at least five thousand in their elderly population, with the exception of Bukit Merah and Whampoa constituencies. Six constituencies are expected to have an increase of more than thirty-five thousand in their elderly population. Generally speaking, the old settlement regions are expected to have a low

increase in the population. This is because of the outmigration of the younger generations during the past. Figure 3 presents a detailed map of the spatial distribution of the growth of elderly population. However, Singapore may be divided into mainly three types of areas on the basis of the growth of elderly population during 1990-2030 :

- Areas with high growth of elderly population (more than 20,000 persons)
- Areas with low growth of elderly population (less than 10,000 persons)
- Areas with moderate growth of elderly population (10,000 to 20,000 persons)

### **Areas with High Growth of Elderly Population (more than 20,000 persons)**

Fifteen constituencies are expected to have an addition of more than twenty thousand elderly in their population (Table 2). Among these, Aljunied, Eunos, Hong Kah, Pasir Panjang, Sembawang, Tampines and Bukit Panjang are expected to have an increase of more than thirty-three thousand in their elderly population. In this category, Tiong Bahru is expected to have the lowest increase (20,673) in the number of elderly persons. Aljunied, Bedok, Eunos, Marine Parade and Tampines are in the eastern region while Jurong and Hong Kah are in the western (Figure 3). Sembawang, Bukit Panjang, Cheng San, Punggol and Thomson are in the north central region while Tiong Bahru, Jalan Besar and Pasir Panjang are in the south central region of Singapore.

### **Areas with Low Growth of Elderly Population (less than 10,000 persons)**

There are seventeen constituencies that are expected to have an increase of less than ten thousand in their elderly population (Table 2). However, even among these

constituencies, the minimum increase in the number of elderly will be 4,247. Within this category, Potong Pasir is expected to have the highest increase (9,733) while Bukit Merah is expected to have the lowest. Among these as many as nine constituencies will have an increase of more than 7,500 elderly in their population. A majority of these constituencies comprise of the old settlement areas of Singapore, which are in the southern and central regions of Singapore (Figure 3). These areas are generally characterised by migration of the younger generations to new towns during the past few decades. So these generations are expected to grow old in the new towns.

### **Areas with Moderate Growth of Elderly Population (10,000 to 20,000 persons)**

There are as many as thirty-three constituencies in this category. Among these, Changi is expected to have the highest increase (19,261) while Yuhua will have the lowest increase (10,203) in elderly population (Table 2). In this category, Toa Payoh, Ayer Rajah, Boon Lay, Braddel Heights, Bukit Gombak, Changi, Chua Chu Kang, Nee Soon Central and Nee Soon South are expected to have an increase of more than fifteen thousand in their elderly population.

Thus, it may be said that all the constituencies of Singapore are expected to have an increase in the number of elderly during 1990-2030 period. The eastern region is expected to have the highest increase, followed by the north central and the western region in that order. The patterns of growth of male and female population are almost the same as that of the total population with a few exceptions. Eunos is projected to have the highest increase in both the elderly female and male populations (Table 2). Bukit Merah is expected to have the lowest increase in the number of both elderly females and males.

## **CONCLUSION**

Thus, it had been observed that the elderly population of Singapore is expected to increase about five times during 1990-2030. Nearly nine hundred and forty thousand elderly are expected to be added during this period. Such a large increase in the number of elderly persons is expected to have serious implications in every aspect of planning for the elderly in future. It is expected that there will be a huge increase in the demand for health care services and facilities, special housing and transportation for the elderly in future. For example, even if the rates of disability and handicap remain unchanged during the period 1990-2030, the numbers of disabled and handicapped elderly are expected to increase about five times.

In all the age groups, the number of elderly females exceeds that of the males in both 1990 and 2030. The increase in the number of elderly females is expected to exceed that of the males by more about seventy-five thousand. This implies that the demand for health care facilities for the females will be higher than that for the males in future even if both have the same disability and handicap rates.

All the constituencies of Singapore are projected to have an increase in the number of elderly during the period 1990-2030. The eastern region is expected to have the highest increase followed by the north central and the western region, in that order. There is a general shift in the elderly population from the south central region in 1990 towards western and north central regions in 2030. This is mainly because the south central region forms one of the oldest settlement regions of Singapore and the young generations have been moving to the new settlement areas during the past decades. This is expected to have implications in the location of health care services and

facilities, special housing and transportation for the future elderly in Singapore.

The high growth of aged population is also expected to lead to debates on a wide range of issues. In developed countries (Scharlach and Kaye, 1997), issues such as the following are already being debated: Should health care be rationed by age? Are the elderly benefiting at the expense of younger

population? Should social security benefits be reduced for high-income individuals? Should eligibility for Medicare be means tested? Should older persons have the right to euthanasia? Should there be an affirmative action policy for hiring older persons? In Singapore, the answers to such questions related to the ageing population may not be easy to find in future.

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## UNINHABITED VILLAGES – AN UNEXPLORED THEME IN POPULATION GEOGRAPHY

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### Abstract

As many as 47,095 villages, out of a total 634,321, in India are uninhabited, or have no population. They cover an estimated area of about two hundred thirty thousand square kilometres, which is around three times the country's total urban area. How far such extensive land should have remained untapped for human settlement in a fast growing population scenario or how best such lands can be made use of in case they are otherwise unsuited for any human settlement, are matters of concern. Although there has been sharp decline in the number of uninhabited villages yet the transformation of inhabited villages into uninhabited ones is also in process. Again the question is : how and why ?

### Introduction

The population census in India is conducted at a regular interval of ten years. A precise demarcation of areas as rural and urban is an essential prerequisite for conducting any census. The enumeration period extends over a period of 20 days, normally, from 19 to 28 February of the relevant year. The population is enumerated at the place of usual residence in the following manner :

- i) all those who normally stay and are present in that household during the entire period of enumeration;
- ii) all those who are known to be normally residing and had stayed during a part of enumeration period although were not present during enumerator's visit;
- iii) all those who are known to be residing but were not present at the time of enumerator's visit, but are expected to be back by the last day of enumeration period ;
- iv) all those visitors who are present in the household and have remained away from the place of their usual residence for the entire span of enumeration; and
- v) the houseless population, who has a tendency of moving from place to place, enumerated uniformly all over the country on the night of last day of enumeration to avoid any omission or duplication.

The process of enumeration, ever since the pre-independence census, has remained virtually on similar lines. Of course, the preliminary enumeration period extended over about one month. The final census was merely the process of bringing up to date the entries made in the schedules during the preliminary enumeration. It was carried on a single night, in the case of pre-independence censuses. The sunrise of March 1 is taken as the reference point of time of a census, as finalised.

### Rural-urban classification

The data collected, by way of canvassing specified schedule and individual slips, are made available down to village level in case of rural areas and ward in the town. Urban and rural areas are precisely defined, in advance. Towns, which constitute the urban segment, may have statutory or non-statutory status. All settlements, notified by the State Government/ Union Territory administration as urban or towns, are considered to have statutory status. Non-statutory towns, that is 'census towns' are defined as such for the purpose of the census. All villages, which qualify the following criteria, are treated as census towns in the Indian census :

- i) a population of at least 5000;
- ii) a population density of at least 400 persons per sq. km., and
- iii) at least 75 per cent of male working force engaged in non-agricultural pursuits.

Other areas constitute the rural segment and for which revenue village is the basic unit. The revenue village may comprise of several hemlets but the entire village is treated as one unit for presentation of data. Revenue village refers to an area for which a separate Record of Rights is maintained or would have been so assessed if the land revenue had not

been realised or compounded or redeemed or which the State Government had otherwise declared as an estate. This definition is identical with that of 'mauza'. In unsurveyed areas, such as forest areas, each habitation area with locally recognised boundaries, within each forest range officer's beat, is treated as one village.

Villages vary in their population size. The Indian Census has a practice of making population figures available by grouping villages according to population size of less than 200, 200-499, 500-999, 1000-1999, 2000-4999, 5000-9999 and 10000 +. The 1991 census revealed that 17.9 per cent of the total villages in India had a population of less than 200 each and these accommodated only 1.7 per cent of the rural population; 24.3 per cent of villages had a population in the range of 200-499, which accounted for 7.8 per cent of rural population; and 25 per cent of villages had a population varying between 500 and 999 and these contained 16.8 per cent of the country's rural population. In other words, about two-thirds of the villages in the country had a population of less than 1000 each and these together shared only around one-fourth of India's rural population. By contrast the remaining, about one-third (32.8 per cent) villages had a population of 1000 or more each, and were inhabited by nearly three-fourth's (74.7%) of country's rural population.

### Uninhabited Cases

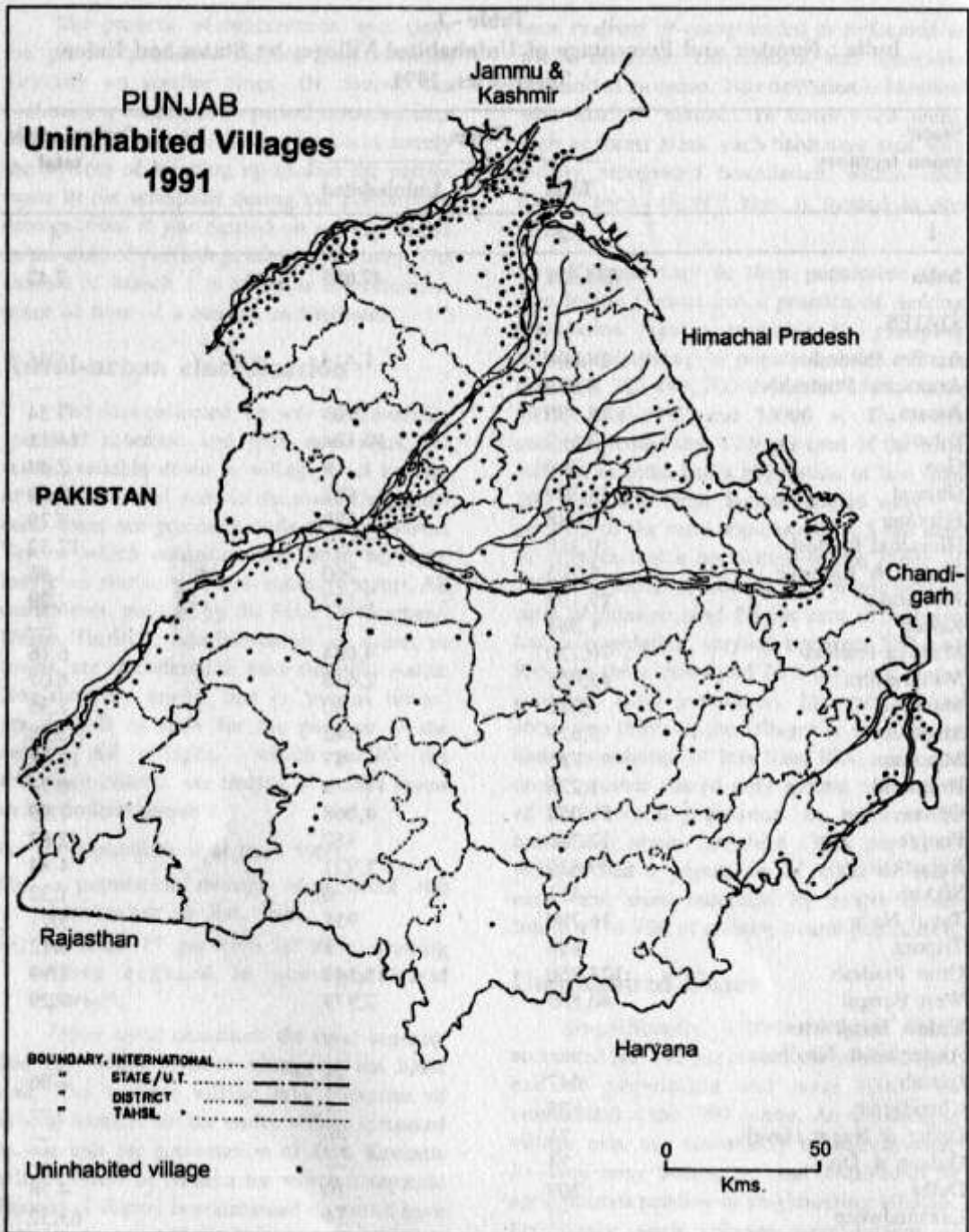
Significantly, 47095 villages, which accounted for 7.42 per cent of the total villages, had no population and were listed as uninhabited at the 1991 census. An uninhabited village may not necessarily be uncultivated. Its land may belong to and cultivated by agriculturists residing in neighbouring villages. Previously, such villages were known as

<sup>1</sup> Census of India, 1931 Punjab Part-I, Report p. (iii).

**Table - 1**  
**India : Number and Percentage of Uninhabited Villages by States and Union Territories, 1991**

State/ union territory	Village		Percentage in total
	Total	Uninhabited	
1	2	3	4
<b>India</b>	<b>634,321</b>	<b>47,095</b>	<b>7.42</b>
<b>STATES</b>			
Andhra Pradesh	28,000	1,414	5.05
Arunachal Pradesh	3,649	—	—
Assam	25,590	905	3.54
Bihar	77,697	10,184	13.11
Goa	369	9	2.44
Gujarat	18,509	481	2.60
Haryana	6,988	229	3.28
Himachal Pradesh	19,388	2,391	12.33
Jammu & Kashmir	6,705	260	3.88
Karnataka	29,193	2,127	7.29
Kerala	1,384	—	—
Madhya Pradesh	76,220	4,694	6.16
Maharashtra	43,025	2,613	6.07
Manipur	2,212	30	1.36
Meghalaya	5,629	145	2.58
Mizoram	785	87	11.08
Nagaland	1,225	9	0.73
Orissa	51,057	4,068	7.97
Punjab	12,795	367	2.87
Rajasthan	39,810	1,921	4.83
Sikkim	453	6	1.32
Tamil Nadu	16,780	958	5.71
Tripura	856	1	0.12
Uttar Pradesh	123,950	11,147	8.99
West Bengal	40,889	2,979	7.29
<b>Union Territories</b>			
Andaman & Nicobar Islands	547	43	7.86
Chandigarh	25	—	—
Dadar & Nagar Haveli	71	—	—
Daman & Diu	24	—	—
Delhi	209	10	4.78
Lakshadweep	23	16	63.57
Pondicherry	264	1	0.38

*Source* : Census of India, *State Profile*, pp. 14-19.



Map 1



*be-chirag*, meaning thereby that these had not lamp to guide the enumerator as to the existence of any settlements. In 1991, one out of every thirteen villages in India was uninhabited.

Table I shows the distribution of uninhabited villages and their proportion in total villages among states/union territories in India. Arunachal Pradesh, Kerala, Chandigarh, Dadar & Nagar Haveli and Daman & Diu are without any uninhabited village. Other states/union territories display a wide disparity in their number as well as proportion in the total. In the smallest union territory of Lakshadweep, almost two-thirds (63.57%) of the total villages are uninhabited. Bihar (13.11), Himachal Pradesh (12.33), Mizoram (11.08), Uttar Pradesh (8.99), Orissa (7.97) and Andaman & Nicobar Islands (7.86) also emerge among the states/union territories with a relatively high percentage of uninhabited villages.

A village in India has, on an average, an area of 4.89 sq.km. By multiplying it with the number of uninhabited villages it is estimated that uninhabited villages cover nearly 7 per cent of the total area. This is almost two and half times the total urban area of the country.

All this raises the following two pertinent questions :

- (i) How could such a vast expanse of land could remain untapped for human settlement in a scenario of a fast growing population in a densely populated country ?
- (ii) How best such areas can be made use of in case they are otherwise unsuited for human settlement?

### Punjab : A Case Study

The Census of India publications provide identification particulars of these villages by giving their name, *hadbast* number (location

**Table - 2**  
**Punjab : Uninhabited Villages by Districts 1971-91**

State/ District	Number of uninhabited village			Percentage in total		
	1991	1981	1971	1991	1981	1971
1	2	3	4	5	6	7
<b>PUNJAB</b>	367	453	700	2.87	3.54	5.43
Gurdaspur	83	80	106	5.10	4.90	6.92
Amritsar	39	51	73	3.14	4.11	5.82
Ferozpur	44	47	83	3.79	4.07	7.11
Ludhiana	18	26	35	1.84	2.64	3.49
Jalandhar	17	34	64	1.35	2.70	5.03
Kapurthala	66	91	144	9.44	13.13	20.57
Hoshiarpur	32	33	55	1.97	2.04	3.36
Rupnagar	22	26	50	2.40	2.83	5.52
Patiala	21	35	50	1.44	2.40	3.37
Sangrur	9	10	15	1.26	1.39	2.07
Bathinda	4	7	10	0.76	1.33	1.89
Faridkot	12	13	15	2.05	2.25	2.59

**Source :** Census of India, 1971, 1981 and 1991, *Punjab, General Population Tables.*

code) and area. No other details are available on such villages. As such any further study in this regard can be made through field investigation of each case. As such a case study of the distribution of uninhabited villages in Punjab was made for the purpose of the present paper. It is based on the Census of India data for the years 1971, 1981 and 1991.

One out of every 35 villages in Punjab was uninhabited in 1991 (Table 2). In absolute numbers 367 villages, out of 12795 in all have no population. These make 2.87 per cent of the total villages. Together they cover nearly 3 per cent of the State's rural area. Almost the same is the proportion of urban area in the State.

Districtwise disparities in the number and proportion of uninhabited villages are striking. The smallest district of Kapurthala has as many as 66 uninhabited villages and these make almost one-tenth (9.44%) of the total villages of the district. Gurdaspur 83 (5.10%), Ferozpur 44 (3.79%) and Amritsar 39 (3.14%) are the other districts with percentage of uninhabited villages higher than that of the state as whole. Districts located to the north of river Satluj, constituting the Upper *Bari* and *Bist doabs*, exhibit a higher frequency of uninhabited villages. By contrast, the uninhabited villages are few and far between in the Malwa region, located south of the river Satluj.

Uninhabited villages are confined mainly to the narrow belts, along the Ravi, Beas and Satluj rivers, where regular floods make them unsuited for human settlements (Map-I). The *mand* (wetland) tract at the confluence of Beas and Satluj rivers, spread over a large part of tahsil Sultanpur Lodhi in Kapurthala district is another area of concentration of uninhabited villages. Almost every sixth village here is uninhabited. The tracts along the *choes* in Hoshiarpur district and also along the river Ghaggar too exhibit a significant sprinkling of

uninhabited villages. Among non-floodplain tracts, Phagwara tahsil of Kapurthala district and Khanna tahsil of Ludhiana district also display a thick concentration of uninhabited villages. In the former case one out of every nine villages (11.40%) and in the latter case, almost one out of every twenty two villages (4.61%) is uninhabited. Reasons need to be explored through fieldwork.

The number of uninhabited villages in Punjab has declined from 700 in 1971 to 453 in 1981 and to 367 in 1991. The share of uninhabited villages in total villages declined from 5.43 in 1971 to 3.54 in 1981 and further to 2.87 in 1991. Evidently the transformation of uninhabited villages into inhabited one's was faster during 1971-81 in comparison to that during the subsequent decade of 1981-91.

Further, it was noted that 8 per cent of the uninhabited villages of 1991 were inhabited in 1971 and 1981. Similarly, about 7 per cent of the villages were inhabited in 1971 but got depopulated during 1981 and their status persisted as such in 1991 too. One-tenth of the uninhabited villages of 1991 had population in 1981 but were reported as uninhabited at the 1991 census.

Although there has been substantial decline in the number as well as proportion of uninhabited villages in Punjab during 1971-1991, yet a simultaneous process of depopulation of inhabited village is a matter of concern.

## Conclusion

An indepth study of uninhabited villages is a fascinating theme in population geography. So far practically no work has been done on this parameter. The present study, which is basically exploratory in nature, calls for detailed studies of uninhabited villages, in terms of their location, causation, landownership, landuse and potential, in different parts of the country.

## MAP SERIES : 4

# SPATIAL CONTRASTS IN SOCIO-DEMOGRAPHIC PROFILES OF INDIA

GOPAL KRISHAN  
Chandigarh, India

This map series on India depicts the spatial patterns of six interrelated socio-demographic variables, namely total fertility rate, mean age at marriage of females, separate place residence couples, joint households, consanguinity and underweight children. An effort has been made to portray the relative location of contrasting areas: those which score either exceptionally high or significantly low on a given parameter. The intention is to discern whether there is any North-South divide on socio-demographic lines.

Maps and tables, in the present exercise, are based on data processed and presented by P.N. Mari Bhat and Francis Xavier in their article, entitled 'Findings of National Family Health Survey: Regional Analysis', published in the *Economic and Political Weekly*, Vol. XXXIV, No 42 -43, October 16 - 23, 1999, pp.3008 - 3032. By appropriately adjusting the information made available by the National Family Health Survey 1992 - 1993 and the Census of India 1991, they generated the data on 38 socio-demographic variables for various states, and their further subdivision into 76

natural regions, in the country. The scheme of natural regions was based on the pattern of physiographic regions delineated by the Census of India, 1981. For want of requisite information, data could not be compiled for the state of Sikkim and all the union territories, barring Delhi.

Map 1 shows the spatial patterns of total fertility rate (TFR), which is defined as the total number of children a woman would bear in her life time if prevailing age-specific fertility rates persist. India's total fertility rate was 4.0 in 1990, covering a wide range from the highest of 7.2 in Nagaland to the lowest of 1.3 in South Kerala. Virtually all the high TFR (above 5) regions were concentrated in North India. These included the entire Northeast Region, Upper and Middle Ganga Plains, and northern parts of Madhya Pradesh as also of Rajasthan. By contrast, practically all the low TFR (less than 3) regions were confined to South India. This description applied more to the coastal plains, and their contiguous inland areas. In explanatory terms, couple protection rate, female literacy, and mean age at marriage of

females were found as exerting the strongest control over TFR, in that order.

Map 2 portrays the mean age at marriage of females in India, as of 1992-93. The all-India figure was placed at 19.1 years. This did, of course, hide a wide range from 25.2 years in Goa to 16 years in the Northeast Uplands of Madhya Pradesh. Over a large part of the country more specifically in Central India, Rajasthan and Bihar Plain, a majority of females were married before attaining the legal age of 18 years. By contrast this was true of only a few regions in South India. In the entire western coastal plain, the mean age at marriage of females was higher than 21 years. The same could be said about a large part of Punjab and its adjoining areas in Himachal Pradesh and Jammu and Kashmir. Tribal regions in the Northeast also were no difference in this regard. Broadly speaking, early marriage of females is typical of those areas where status of women is low and daughters are seen as a liability to be dispensed with, as early as possible. Historically, the law and order situation in such areas has been fluid. In statistical terms, this socio-demographic variable showed a strong positive relationship with the female literacy rate and almost an equally significant negative one with the incidence of joint households.

Map 3 depicts the spatially varying proportion of the 'separate place residence couples' in the total. Going by the description provided by the data source, such couples were represented by 'the married women whose husbands were away from the place where their family was based'. The all India figure, on this count, was 5.7 per cent in 1992-93. This has to place this figure in the context of the range from the highest of 27.3 per cent in North Himachal Pradesh to the lowest of 0.5 per cent in Tel-Mahanadi region of Orissa. The share of such couples was notably high in the entire Western Himalayas, Middle Ganga Plain, and Bundelkhand region of Uttar

Pradesh, Northwest Rajasthan as also its adjoining tract of West Haryana, inland Maharashtra, and coastal regions of Goa, Kerala and Tamil Nadu. This found an association with an excessive male-selective migration for employment, particularly in defence services, metropolitan cities, and foreign countries. By contrast, the proportion of such couples was distinctly low in Central India, Northeastern India, Western Rajasthan and peninsular interior. Most of them are at a low level of development and family-outmigration is more typical in their case. 'Separate place residence couples' represented a situation where the source and destination areas of migrants were in sharp contrast to each other, culturally and climatically; migrants had a land property and joint family base in the source areas; and they had no fixed job or residence at their destination.

Map 4 provides a spatial picture of the frequency of joint households. The present exercise defines a joint household as the one which has more than one married/ widowed/ divorced/ separated person of the same sex living together. National average on this count was 43.8 per cent in 1992-93. Extreme scores ranged from the highest of 59.2 per cent in Bhojpur Plain of Uttar Pradesh to the lowest of 4.1 per cent in the Konkan region of Maharashtra. Joint households made more than one-half of the total in the Middle Ganga Plain, Bundelkhand Plateau, Malwa Plateau and Chhatisgarh Plain in Central India and Desh Region of Maharashtra alongwith its adjoining area in Karnatka. On the other hand, the proportion of such households was less than one-third of the total in Northeast India, Konkan Coastal region and parts of Tamil Nadu. Joint families are more characteristic of those situations where production base is common and requires pooled effort; marriage is early and status of women is low; and considerations of security of life and property are paramount. These are more

common among agriculturists, artisans and business households. A mental cost-benefit analysis, primarily on economic lines, determines the preponderance or otherwise of such families.

Map 5 is a portrayal of the incidence of consanguinity as it varied from one part of India to another. As a concept, it refers to marriage among blood relatives. In the present case, it has been computed by working out the percentage of women who were married to a blood relative. In India, 17.9 per cent of the marriages were recorded as consanguine in 1992-93. This percentage was as high as 52.4 in East Uplands of Tamil Nadu and as low as 0.8 in Southeast Haryana Plain. A sharp contrast is observed between a relatively high incidence of consanguinity in South India and a low one in Northwest and Northeast India. Muslims, anywhere, are noted for a relatively high degree of consanguinity. South Indian tradition had a preference for cross-cousin marriage between children of brothers and sisters as also for marriage between uncle and niece. Among the Muslims, not only cross-cousin marriage but also the parallel-cousin marriage between children of brothers or sisters is permitted. Underlying considerations seem to be strengthening of family bond, assured sustainability of wedlock, and desired care of the newly wed in her new home. Some anthropologists, however, view such marriages as a refined variant of the bride-exchange system, based on the principle of reciprocity.

Map 6 highlights the regional variations in the percentage of underweight children. In precise terms, these are the children who are younger than four years and whose weight is two standard deviations lower than the standard age-weights prescribed by the World Health Organisation. As many as 53.9 per cent of the children in India were recorded as underweight in 1992-93. This percentage was the highest 67.7 in the Chhattisgarh region

and the lowest at 14 in the case of South Arid Plain of Rajasthan. The proportion of underweight children was more than one-half in Bihar, Oudh Plain of Uttar Pradesh, tribal belt of Central India, Rayalaseema region of Andhra Pradesh, East Maharashtra and North Karnataka. By contrast, this share was less than one-third in Northwest India, Northeast India, and Goa - Karnataka - Kerala Coastal Plain. Underweight children find a strong association with a lower age at marriage of females, a higher TFR, and a greater frequency of joint households.

Notwithstanding considerable overlapping in their spatial manifestation, the six socio-demographic variables do display some distinct spatial pattern in each case. The extensive North India Plain stands in contrast to the two Coastal Plains in respect of their TFR; the former being much more prolific. The isolines, representing the mean age at marriage of females, carry low scores in the geographic heartland of the country but assume higher ones as one moves toward the periphery. The 'separate place residence couples' map has a more complex topography: the peak areas being those which are characterised by a tradition of service in defence forces or by sizable migration to other countries, or by high incidence of poverty. Regional variations in the proportion of joint families are not that sharp but present a spatial picture which is a reverse of that of the TFR, with high scores in the geographic heartland, decreasing towards the periphery. 'Consanguinity' map is expressive of the North-South divide, more than any other parameter. Finally, the incidence of 'underweight children' is neutral to North and South; it is as typical of high density-humid parts of North India as of the low density drought-prone areas of South India. On the whole, the heartland periphery and the coast-inland contrasts are more striking than any North-South divide.

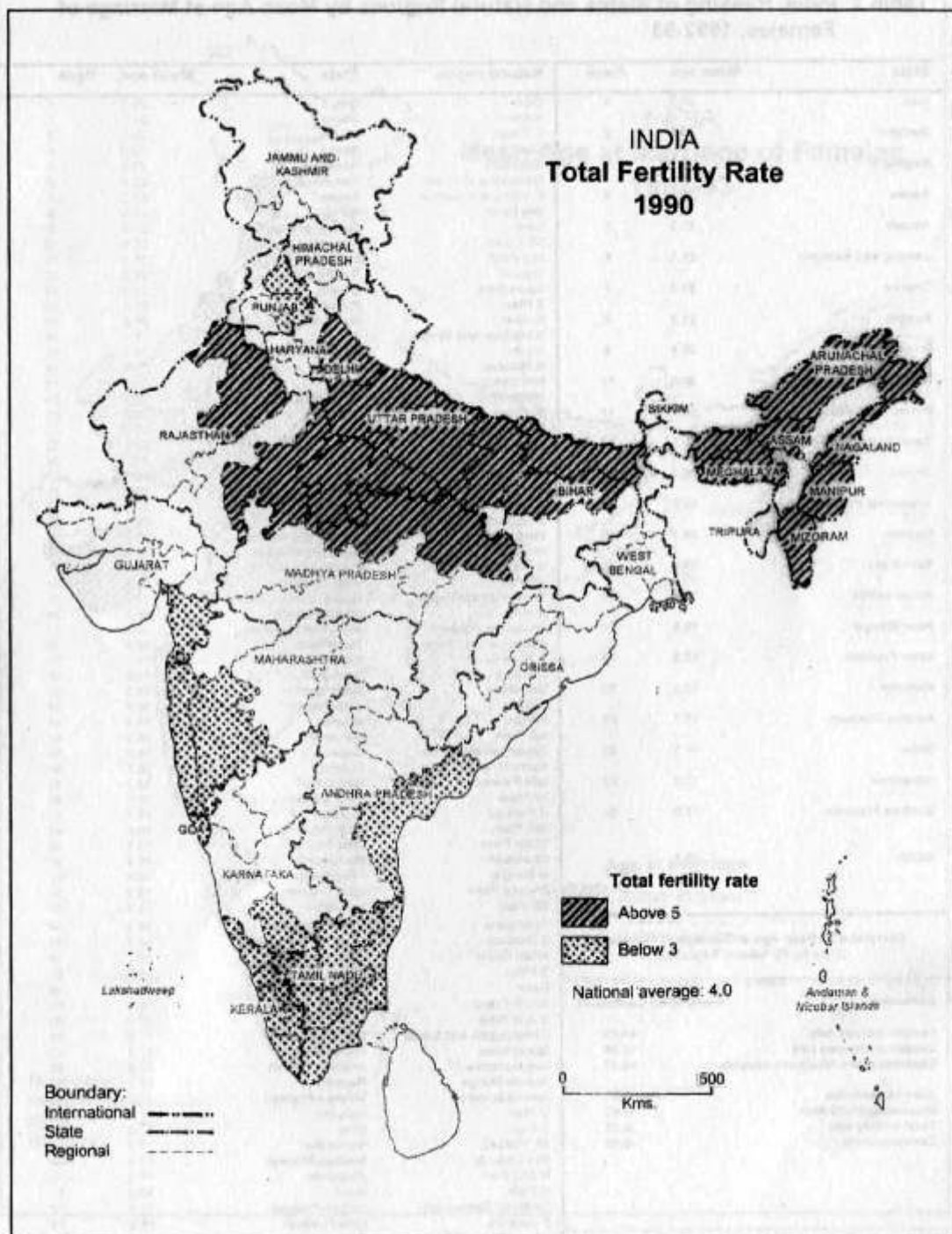
Table 1: India, Ranking of States and Natural Regions by Total Fertility Rate, 1990

State	Total fertility rate	Rank	Natural region	State	Total fertility rate	Rank
Nagaland	7.2	1	Nagaland	Nagaland	7.2	1
Meghalaya	6.6	2	Meghalaya	Meghalaya	6.6	2
Manipur	5.7	3	NW Valley	Assam	5.7	3
Mizoram	5.4	4	Manipur	Manipur	5.7	4
Uttar Pradesh	5.4	5	Bhopur Plain	Uttar Pradesh	5.7	5
Arunachal Pradesh	5.2	6	SW Plain	Uttar Pradesh	5.6	6
Assam	5.1	7	NE Plain	Uttar Pradesh	5.5	7
Bihar	5.0	8	Mizoram	Mizoram	5.4	8
Rajasthan	4.8	9	Oudh Plain	Uttar Pradesh	5.4	9
Madhya Pradesh	4.5	10	NW Uplands	Madhya Pradesh	5.3	10
Tripura	4.2	11	S Arid Plain	Rajasthan	5.3	11
Orissa	3.9	12	Arunachal Pradesh	Arunachal Pradesh	5.2	12
West Bengal	3.7	13	S Plain	Bihar	5.2	13
Gujarat	3.6	14	Banas-Chambal Basin	Rajasthan	5.2	14
Haryana	3.5	15	S Uplands	Uttar Pradesh	5.1	15
Maharashtra	3.4	16	N Plain	Bihar	5.1	16
Karnataka	3.4	17	NW Valley	Assam	5.0	17
Andhra Pradesh	3.2	18	NE Uplands	Madhya Pradesh	5.0	18
Himachal Pradesh	3.1	19	E Valley and Chachar	Assam	4.9	19
Punjab	3.0	20	S Plateau	Bihar	4.7	20
Goa	2.5	21	NE Plateau	Karnataka	4.6	21
Tamil Nadu	2.5	22	Aravali Range	Rajasthan	4.6	22
Kerala	1.9	23	N Bengal	West Bengal	4.5	23
Jammu & Kashmir	..		Narmada Valley	Madhya Pradesh	4.3	24
India	4.0		Mauwa Plateau	Madhya Pradesh	4.3	25
			N And Plain	Rajasthan	4.3	26
			Tripura	Tripura	4.2	27
			SE Plain	Haryana	4.2	28
			Coast and Delta	Orissa	4.1	29
			N Hills	Uttar Pradesh	4.1	30
			Kachchh and N Plain	Gujarat	4.1	31
			Chhatisgarh and Bastar	Madhya Pradesh	4.1	32
			Marahtwada	Maharashtra	4.0	33
			Saurashtra	Gujarat	3.9	34
			E Plain	Gujarat	3.9	35
			Khandesh	Maharashtra	3.8	36
			N Hills	Orissa	3.8	37
			Telangana	Andhra Pradesh	3.8	38
			Tel-Mahanadi Region	Orissa	3.8	39
			S Plateau	Orissa	3.8	40
			Vidharbha	Maharashtra	3.6	41
			NW Plateau	Karnataka	3.5	42
			C Plain	Haryana	3.5	43
			Delhi	Delhi	3.4	44
			North	Himachal Pradesh	3.4	45
			S Delta	West Bengal	3.4	46
			Sabarmati-Mahi Plain	Gujarat	3.3	47
			W Plain	West Bengal	3.3	48
			NE Plain	Haryana	3.3	49
			S Plain	Punjab	3.3	50
			S Plain	Haryana	3.3	51
			South	Himachal Pradesh	3.2	52
			C Plateau	Karnataka	3.2	53
			NW Plain	Punjab	3.2	54
			Rayalseema	Andhra Pradesh	3.2	55
			Godavari Depression	Andhra Pradesh	3.2	56
			Malenad and Coast	Karnataka	3.0	57
			North Coast	Andhra Pradesh	3.0	58
			Bist Boab	Punjab	2.9	59
			SE Coast	Tamil Nadu	2.9	60
			S Malabar and W Hills	Kerala	2.8	61
			Konkan	Maharashtra	2.8	62
			Desh	Maharashtra	2.8	63
			E Plain	Punjab	2.8	64
			S Plain	Gujarat	2.7	65
			South Coast	Andhra Pradesh	2.7	66
			S Plateau	Karnataka	2.7	67
			E Uplands	Tamil Nadu	2.6	68
			Goa	Goa	2.5	69
			Coromandel	Tamil Nadu	2.5	70
			N Malabar	Kerala	2.2	71
			Kongunad and Nilgri	Tamil Nadu	2.1	72
			C Coast	Kerala	1.3	73
			S Coast	Kerala	1.3	74
			East	Jammu and Kashmir		
			West	Jammu and Kashmir		

Correlates of Total Fertility Rate (Data by 76 Natural Regions)	
Correlates	Correlation Coefficient
Underweight children	: +0.15
Joint households	: +0.09
Couple protection rate	: -0.81
Female literacy rate	: -0.53
Consanguinity	: -0.40
Mean age at marriage	: -0.28
Separate place residence couples	: -0.12

Source: See text. Data not available for Sikkim and all Union Territories, barring Delhi.



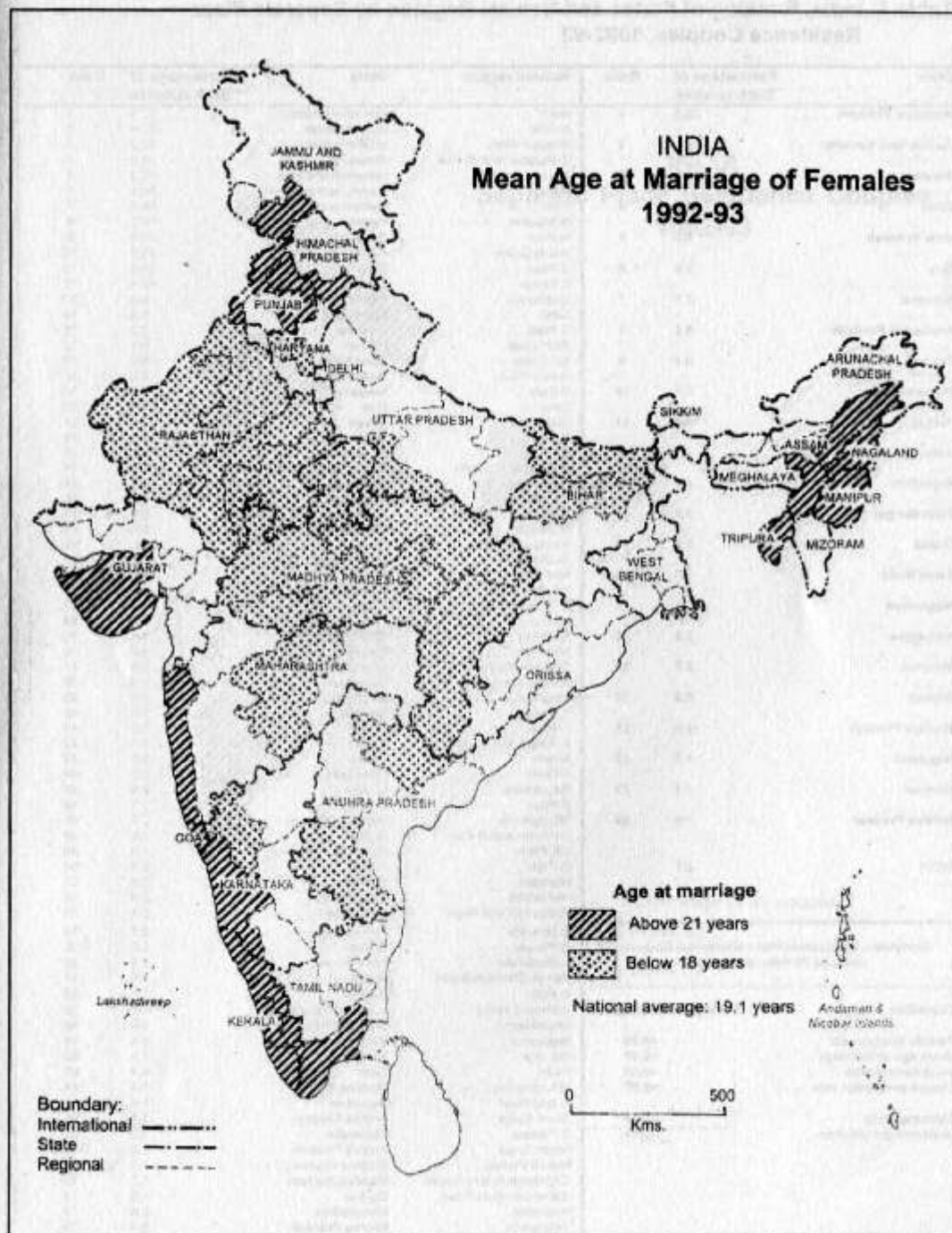
Map 1

**Table 2: India, Ranking of States and Natural Regions by Mean Age at Marriage of Females, 1992-93**

State	Mean age	Rank	Natural region	State	Mean age	Rank
Goa	25.2	1	Goa	Goa	25.2	1
Manipur	24.7	2	Manipur	Manipur	24.7	2
Nagaland	22.6	3	C Coast	Kerala	23.5	3
Kerala	22.2	4	South Coast	Kerala	23.0	4
Assam	21.3	5	Nagaland	Nagaland	22.6	5
Jammu and Kashmir	21.3	6	Malenad and Coast	Karnataka	22.4	6
Tripura	21.2	7	E Valley and Cachar	Assam	22.2	7
Punjab	21.2	8	Bist Doab	Punjab	21.9	8
Meghalaya	20.8	9	East	Jammu and Kashmir	21.5	9
Mizoram	20.8	10	SE Coast	Tamil Nadu	21.5	10
Himachal Pradesh	20.5	11	NW Plain	Punjab	21.3	11
Tamil Nadu	20.5	12	Tripura	Tripura	21.2	12
Orissa	20.2	13	Saurashtra	Gujarat	21.2	13
Arunachal Pradesh	19.8	14	E Plain	Punjab	21.2	14
Gujarat	19.7	15	Konkan	Maharashtra	21.2	15
Karnataka	19.4	16	S Malabar and W Hills	Kerala	21.1	16
Maharashtra	19.1	17	South	Himachal Pradesh	21.1	17
West Bengal	18.9	18	N Malabar	Kerala	21.1	18
Uttar Pradesh	18.8	19	NW Valley	Assam	20.8	19
Haryana	18.2	20	Meghalaya	Meghalaya	20.8	20
Andhra Pradesh	17.7	21	Mizoram	Mizoram	20.8	21
Bihar	17.3	22	Delhi	Delhi	20.8	22
Rajasthan	17.2	23	Coast and Delta	Orissa	20.7	23
Madhya Pradesh	17.0	24	N Hills	Orissa	20.7	24
INDIA	19.1		Coromandel	Tamil Nadu	20.7	25
			SW Valley	Assam	20.6	26
			S Plain	Gujarat	20.6	27
			E Uplands	Tamil Nadu	20.5	28
			West	Jammu and Kashmir	20.4	29
			North	Himachal Pradesh	20.3	30
			S Plain	Punjab	20.0	31
			NE Plain	Uttar Pradesh	19.9	32
			Tel-Mahanadi Region	Orissa	19.9	33
			N Hills	Uttar Pradesh	19.8	34
			Arunachal Pradesh	Arunachal Pradesh	19.8	35
			Kongunad and Nign	Tamil Nadu	19.8	36
			C Plateau	Karnataka	19.7	37
			S Plateau	Karnataka	19.6	38
			Vidharbha	Maharashtra	19.5	39
			S Delta	West Bengal	19.5	40
			E Plain	Gujarat	19.4	41
			NE Plain	Haryana	19.9	42
			Sabarmati-Mahi Plain	Gujarat	19.8	43
			Kachchh and N Plain	Gujarat	19.7	44
			NW Plateau	Karnataka	19.7	45
			W Plain	West Bengal	19.7	46
			S Plateau	Orissa	19.7	47
			SW Plain	Uttar Pradesh	19.6	48
			Oudh Plain	Uttar Pradesh	19.5	49
			Khandeesh	Maharashtra	19.4	50
			N Bengal	West Bengal	19.4	51
			Bhopur Plain	Uttar Pradesh	19.3	52
			SE Plain	Haryana	19.3	53
			Telangana	Andhra Pradesh	19.2	54
			S Plateau	Bihar	19.1	55
			North Coast	Andhra Pradesh	19.1	56
			S Plain	Haryana	19.0	57
			Desh	Maharashtra	19.0	58
			South Coast	Andhra Pradesh	19.0	59
			S Arid Plain	Rajasthan	17.9	60
			Chhattisgarh and Bastar	Madhya Pradesh	17.8	61
			Marathwara	Maharashtra	17.8	62
			Rayasaseema	Andhra Pradesh	17.8	63
			Aravalli Range	Rajasthan	17.7	64
			Narmada Valley	Madhya Pradesh	17.6	65
			C Plain	Haryana	17.4	66
			S Plain	Bihar	17.4	67
			NE Plateau	Karnataka	17.3	68
			NW Uplands	Madhya Pradesh	17.2	69
			N Arid Plain	Rajasthan	17.0	70
			N Plain	Bihar	16.9	71
			Godavari Depression	Andhra Pradesh	16.9	72
			S Uplands	Uttar Pradesh	16.6	73
			Banas-Chambal Basin	Rajasthan	16.6	74
			Malwa Plateau	Madhya Pradesh	16.6	75
			NE Uplands	Madhya Pradesh	16.0	76

Source: See text. Data not available for Sikkim and all Union Territories, barring Delhi.





Map 2

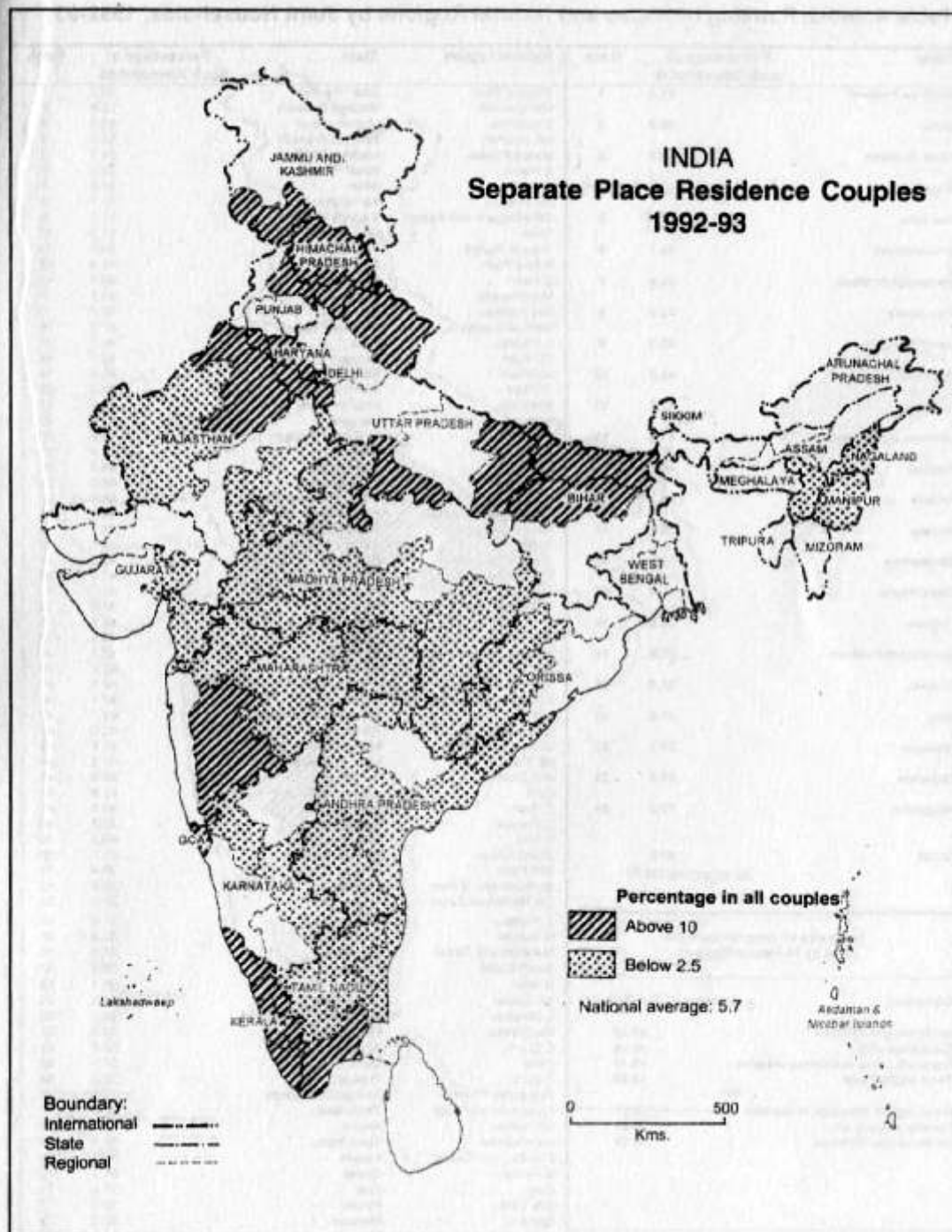
**Table 3: India, Ranking of States and Natural Regions by Separate Place Residence Couples, 1992-93**

State	Percentage of Such couples	Rank	Natural region	State	Percentage of Such couples	Rank
Himachal Pradesh	25.3	1	North	Himachal Pradesh	27.3	1
Jammu and Kashmir	16.6	2	N Hills	Uttar Pradesh	22.4	2
Kerala	14.9	3	Bhojpur Plain	Uttar Pradesh	20.9	3
Bihar	10.9	4	S Malabar and W Hills	Kerala	19.9	4
Uttar Pradesh	9.8	5	South	Himachal Pradesh	19.3	5
Goa	7.6	6	West	Jammu and Kashmir	18.3	6
Haryana	7.1	7	East	Jammu and Kashmir	16.2	7
Arunachal Pradesh	6.0	8	N Malabar	Kerala	16.0	8
Tripura	5.8	9	N Plain	Bihar	14.0	9
Maharashtra	5.1	10	South Coast	Kerala	13.6	10
Punjab	4.8	11	S Plain	Bihar	11.4	11
Assam	4.7	12	C Coast	Kerala	10.4	12
Rajasthan	4.1	13	S Uplands	Uttar Pradesh	9.5	13
West Bengal	3.8	14	Desh	Maharashtra	9.4	14
Orissa	3.4	15	C Plain	Haryana	9.2	15
Tamil Nadu	3.3	16	Bisht Doab	Punjab	9.1	16
Meghalaya	3.2	17	SE Coast	Tamil Nadu	9.0	17
Karnataka	2.8	18	N And Plain	Rajasthan	9.0	18
Mizoram	2.5	19	S Plain	Haryana	8.8	19
Gujarat	2.2	20	Goa	Goa	7.6	20
Madhya Pradesh	1.6	21	SW Valley	Assam	7.0	21
Nagaland	1.6	22	Korikan	Maharashtra	6.9	22
Manipur	1.5	23	SE Plain	Haryana	6.5	23
Andhra Pradesh	1.4	24	Arunachal Pradesh	Arunachal Pradesh	6.0	24
INDIA	5.7		NE Plateau	Karnataka	5.9	25
			Tripura	Tripura	5.8	26
			Malenad and Coast	Karnataka	5.1	27
			N Bengal	West Bengal	5.0	28
			Coast and Delta	Orissa	5.0	29
			Oudh Plain	Uttar Pradesh	5.0	30
			NW Valley	Assam	4.9	31
			NE Plain	Haryana	4.8	32
			S Plateau	Bihar	4.8	33
			W Plain	West Bengal	4.5	34
			SW Plain	Uttar Pradesh	4.4	35
			NW Plain	Punjab	3.9	36
			Godavari Depression	Andhra Pradesh	3.5	37
			Aravalli Range	Rajasthan	3.5	38
			Meghalaya	Meghalaya	3.2	39
			S Plateau	Karnataka	3.1	40
			E Plain	Punjab	3.0	41
			E Valley and Cachar	Assam	3.0	42
			N Hills	Orissa	2.9	43
			S Delta	West Bengal	2.8	44
			Saurashtra	Gujarat	2.8	45
			E Plain	Gujarat	2.7	46
			NE Uplands	Madhya Pradesh	2.7	47
			Kachchh and N Plain	Gujarat	2.6	48
			NE Plain	Uttar Pradesh	2.6	49
			S Plain	Punjab	2.5	50
			Mizoram	Mizoram	2.5	51
			Vidharbha	Maharashtra	2.4	52
			Kongunad and Nigin	Tamil Nadu	2.1	53
			E Uplands	Tamil Nadu	2.1	54
			S Plateau	Orissa	2.0	55
			Coromandel	Tamil Nadu	1.8	56
			Banas-Chambal Basin	Rajasthan	1.8	57
			S Plain	Gujarat	1.7	58
			Narmada valley	Madhya Pradesh	1.7	59
			Marathwada	Maharashtra	1.6	60
			Nagaland	Nagaland	1.6	61
			Manipur	Manipur	1.5	62
			Delhi	Delhi	1.4	63
			NW Uplands	Madhya Pradesh	1.4	64
			S And Plain	Rajasthan	1.4	65
			South Coast	Andhra Pradesh	1.3	66
			C Plateau	Karnataka	1.3	67
			North Coast	Andhra Pradesh	1.2	68
			Malwa Plateau	Madhya Pradesh	1.1	69
			Chhattisgarh and Bastar	Madhya Pradesh	1.1	70
			Sabarmati-Mahi Plain	Gujarat	1.0	71
			Khandesh	Maharashtra	0.9	72
			Telangana	Andhra Pradesh	0.9	73
			NW Plateau	Karnataka	0.6	74
			Rayalaseema	Andhra Pradesh	0.5	75
			Tel-Mahanadi region	Orissa	0.5	76

Correlates of Separate Place Residence Couples (Data by 76 Natural Regions)		
Correlates		Correlation Coefficient
Female literacy rate	:	+0.25
Mean age at marriage	:	+0.17
Joint households	:	+0.15
Couple protection rate	:	+0.07
Consanguinity	:	-0.19
Underweight children	:	-0.15

Source: See text. Data not available for Sikkim and all Union Territories, barring Delhi.

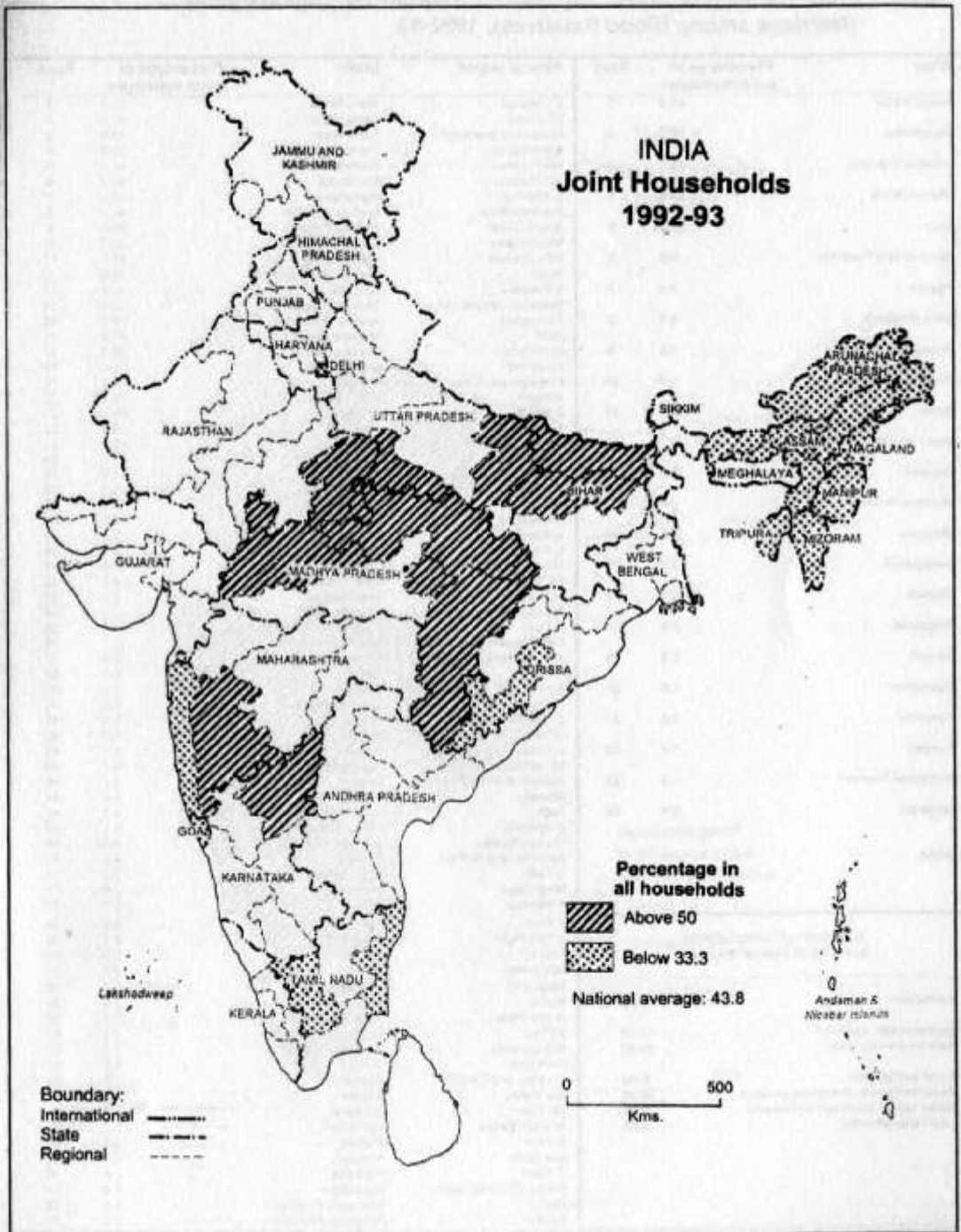


Map 3

Table 4: India, Ranking of States and Natural Regions by Joint Households, 1992-93

State	Percentage of such households	Rank	Natural region	State	Percentage of such households	Rank
Madhya Pradesh	51.1	1	Bhopur Plain	Uttar Pradesh	59.2	1
Bihar	50.2	2	NW Uplands	Madhya Pradesh	53.8	2
Uttar Pradesh	48.3	3	S Uplands	Uttar Pradesh	53.0	3
Rajasthan	46.9	4	NE Uplands	Madhya Pradesh	52.6	4
Haryana	46.9	5	Malwa Plateau	Madhya Pradesh	51.7	5
Maharashtra	44.7	6	S Plain	Bihar	51.5	6
Himachal Pradesh	42.9	7	N Plain	Bihar	51.5	7
Karnataka	42.6	8	NE Plateau	Karnataka	51.1	8
West Bengal	42.3	9	Chhattisgarh and Bastar	Madhya Pradesh	51.1	9
Andhra Pradesh	42.2	10	Desh	Maharashtra	51.0	10
Gujarat	42.0	11	Aravalli Range	Rajasthan	49.5	11
Jammu and Kashmir	41.4	12	N And Plain	Rajasthan	48.8	12
Punjab	40.6	13	C Plain	Haryana	48.4	13
Orissa	39.3	14	Marathwada	Maharashtra	48.3	14
Kerala	38.3	15	NW Plateau	Karnataka	48.0	15
Meghalaya	34.0	16	Narmada valley	Madhya Pradesh	47.2	16
Tamil Nadu	33.0	17	S Plateau	Bihar	46.7	17
Tripura	32.6	18	SE Plain	Haryana	46.7	18
Arunachal Pradesh	32.6	19	NE Plain	Haryana	46.4	19
Assam	31.3	20	W Plain	West Bengal	46.3	20
Goa	31.0	21	SW Plain	Uttar Pradesh	45.9	21
Manipur	30.2	22	S Plain	Haryana	45.4	22
Mizoram	27.0	23	South	Himachal Pradesh	45.2	23
Nagaland	17.3	24	S And Plain	Rajasthan	44.9	24
INDIA	43.8		E Plain	Gujarat	44.7	25
			Outh Plain	Uttar Pradesh	44.6	26
			North Coast	Andhra Pradesh	44.3	27
			Godavari Depression	Andhra Pradesh	44.2	28
			Rayalaseema	Andhra Pradesh	44.1	29
			West Coast and Delta	Jammu and Kashmir	44.0	30
			Saurashtra	Orissa	43.3	31
			S Delta	Gujarat	42.6	32
			S Malabar and W Hills	West Bengal	42.7	33
			Khandesh	Kerala	42.6	34
			S Plain	Maharashtra	42.5	35
			Banas-Chambal Basin	Gujarat	42.5	36
			S Plain	Rajasthan	42.5	37
			Telangana	Punjab	42.2	38
			Sabarmati-Mahi Plain	Andhra Pradesh	42.1	39
			North	Gujarat	42.1	40
			N Malabar	Himachal Pradesh	42.1	41
			Vidhartha	Kerala	42.0	42
			NE Plain	Maharashtra	41.8	43
			East	Uttar Pradesh	41.3	44
			E Plain	Punjab	40.9	45
			C Plateau	Jammu and Kashmir	40.8	46
			N Hills	Punjab	40.8	47
			South Coast	Karnataka	40.3	48
			NW Plain	Uttar Pradesh	40.2	49
			Kachchh and N Plain	Andhra Pradesh	39.7	50
			Tel-Mahanadi Region	Punjab	39.4	51
			S Plateau	Gujarat	38.5	52
			N Bengal	Orissa	37.5	53
			Malenad and Coast	Karnataka	37.4	54
			South Coast	West Bengal	37.3	55
			N Hills	Karnataka	37.0	56
			SE Coast	Kerala	36.2	57
			E Uplands	Orissa	36.1	58
			Meghalaya	Tamil Nadu	34.3	59
			C Coast	Tamil Nadu	34.2	60
			Delhi	Meghalaya	34.0	61
			Tripura	Kerala	34.0	62
			Arunachal Pradesh	Delhi	33.1	63
			Kongunad and Nilgiri	Tripura	32.6	64
			SW Valley	Arunachal Pradesh	32.6	65
			Coromandel	Tamil Nadu	32.4	66
			E Valley and Cachar	Assam	32.1	67
			S Plateau	Tamil Nadu	31.5	68
			Goa	Assam	31.4	69
			NW Valley	Orissa	31.0	70
			Manipur	Goa	31.0	71
			Mizoram	Assam	30.3	72
			Nagaland	Manipur	30.2	73
			Konkan	Mizoram	27.0	74
				Nagaland	17.3	75
				Maharashtra	4.1	76

Source: See text. Data not available for Sikkim and all Union Territories, barring Delhi



Map 4

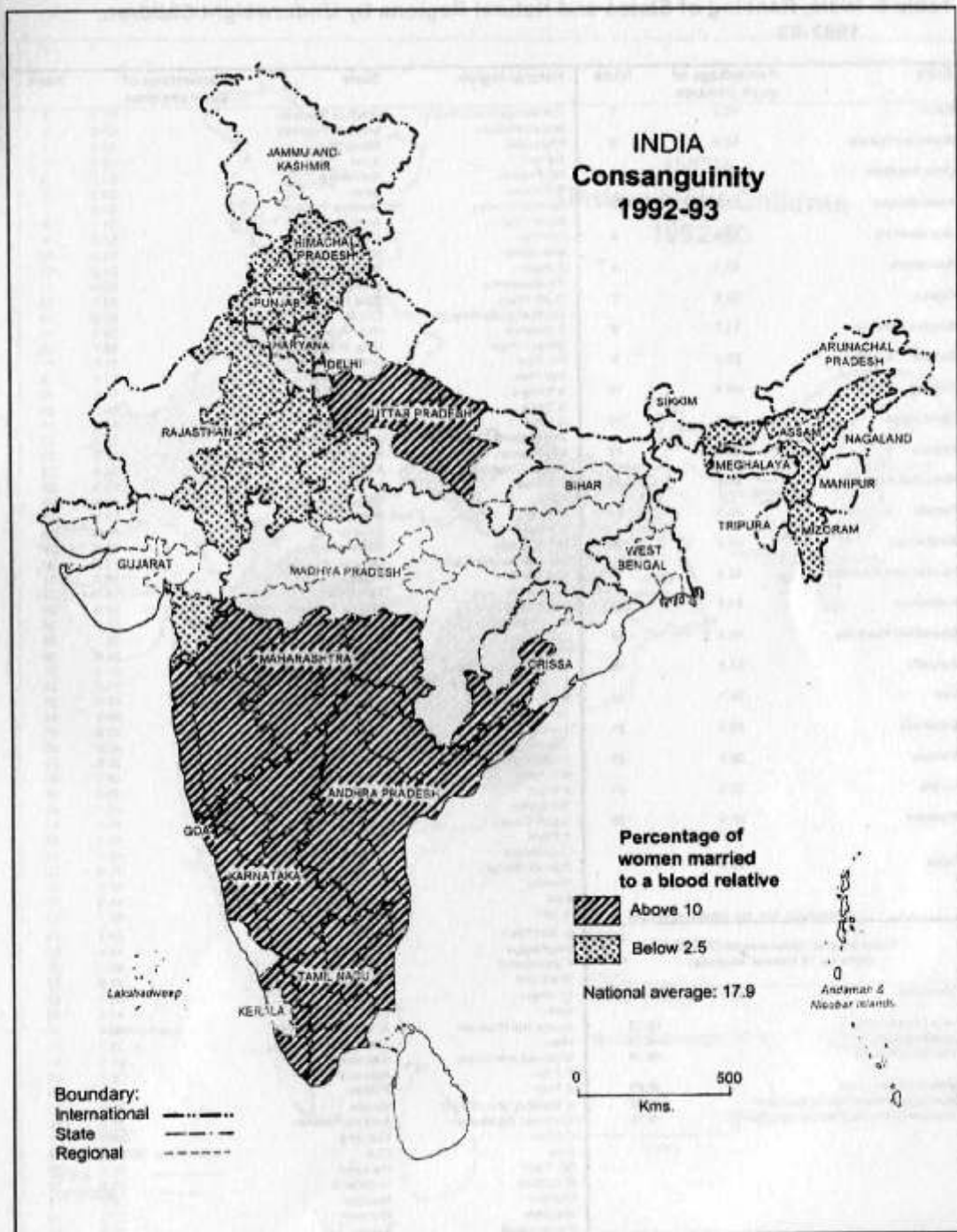
**Table 5: India, Ranking of States and Natural Regions by Consanguinity  
(Marriage among Blood Relatives), 1992-93**

State	Percentage of such marriages	Rank	Natural region	State	Percentage of such marriages	Rank
Tamil Nadu	46.4	1	E Uplands	Tamil Nadu	52.4	1
Karnataka	35.7	2	SE Coast	Tamil Nadu	47.5	2
Andhra Pradesh	35.1	3	Kongunad and Nilgiri	Tamil Nadu	43.9	3
Maharashtra	25.5	4	Coromandel	Tamil Nadu	42.0	4
Goa	14.4	5	North Coast	Andhra Pradesh	41.0	5
Jammu and Kashmir	9.8	6	NE Plateau	Karnataka	40.3	6
Kerala	9.4	7	C Plateau	Karnataka	40.3	7
Uttar Pradesh	8.8	8	Rayalaseema	Andhra Pradesh	40.2	8
Arunachal Pradesh	8.8	9	South Coast	Andhra Pradesh	36.8	9
Orissa	7.0	10	NW Plateau	Karnataka	36.2	10
Bihar	6.3	11	Marathwada	Maharashtra	35.7	11
West Bengal	6.2	12	West	Jammu and Kashmir	33.6	12
Gujarat	5.7	13	S Plateau	Karnataka	32.9	13
Madhya Pradesh	4.9	14	Godavari Depression	Andhra Pradesh	32.4	14
Manipur	4.7	15	Telangana	Andhra Pradesh	28.5	15
Meghalaya	3.5	16	Desh	Maharashtra	27.3	16
Tripura	2.9	17	Vidharbha	Maharashtra	24.0	17
Nagaland	2.6	18	Khandesh	Maharashtra	23.0	18
Assam	2.2	19	Malenad and Coast	Karnataka	18.9	19
Rajasthan	2.0	20	Konkan	Maharashtra	18.4	20
Haryana	1.8	21	S Plateau	Orissa	16.0	21
Punjab	1.6	22	Goa	Goa	14.4	22
Himachal Pradesh	1.4	23	South Coast	Kerala	12.2	23
Mizoram	0.9	24	Oudh Plain	Uttar Pradesh	11.7	24
INDIA	17.9		S Malabar and W Hills	Kerala	11.5	25
			SW Plain	Uttar Pradesh	10.0	26
			N Bengal	West Bengal	9.6	27
			Saurashtra	Gujarat	9.1	28
			N Malabar	Kerala	9.1	29
			N Plain	Bihar	8.8	30
			Arunachal Pradesh	Arunachal Pradesh	8.8	31
			NE Plain	Uttar Pradesh	8.2	32
			W Plain	West Bengal	7.6	33
			Bhojpur Plain	Uttar Pradesh	7.1	34
			E Plain	Gujarat	7.1	35
			Chhattisgarh and Bastar	Madhya Pradesh	6.7	36
			Tel - Mahanadi Region	Orissa	6.5	37
			Delhi	Delhi	6.1	38
			N Hills	Orissa	5.8	39
			Narmada valley	Madhya Pradesh	5.5	40
			Coast and Delta	Orissa	5.4	41
			S Plain	Bihar	5.0	42
			C Coast	Kerala	5.0	43
			NE Uplands	Madhya Pradesh	4.7	44
			Sabarmati-Mahi Plain	Gujarat	4.7	45
			Manipur	Manipur	4.7	46
			East	Jammu and Kashmir	4.2	47
			S Uplands	Uttar Pradesh	4.1	48
			Malwa Plateau	Madhya Pradesh	4.0	49
			Kachchh and N Plain	Gujarat	4.0	50
			S Delta	West Bengal	3.5	51
			Meghalaya	Meghalaya	3.5	52
			S Plateau	Bihar	3.4	53
			S Plain	Haryana	3.4	54
			S Arid Plain	Rajasthan	3.1	55
			Tripura	Tripura	2.9	56
			NW Valley	Assam	2.8	57
			Nagaland	Nagaland	2.6	58
			N Hills	Uttar Pradesh	2.5	59
			N Arid Plain	Rajasthan	2.3	60
			S Plain	Gujarat	2.3	61
			NW Uplands	Madhya Pradesh	2.2	62
			NW Plain	Punjab	2.2	63
			E Valley and Cachar	Assam	2.0	64
			SW Valley	Assam	1.9	65
			NE Plain	Haryana	1.8	66
			Aravalli Range	Rajasthan	1.7	67
			S Plain	Punjab	1.7	68
			Bist Doab	Punjab	1.5	69
			C Plain	Haryana	1.4	70
			Banas-Chambal Basin	Rajasthan	1.4	71
			North	Himachal Pradesh	1.4	72
			South	Himachal Pradesh	1.3	73
			E Plain	Punjab	1.1	74
			Mizoram	Mizoram	0.9	75
			SE Plain	Haryana	0.8	76

Correlates of Consanguinity (Data by 76 Natural Regions)	
Correlates	Correlation Coefficient
Underweight children	: +0.19
Female literacy rate	: +0.03
Total fertility rate	: -0.40
Separate place residence couples	: -0.19
Mean age at marriage of females	: -0.08
Joint Households	: -0.07

Source: See text. Data not available for Sikkim and all Union Territories, barring Delhi.

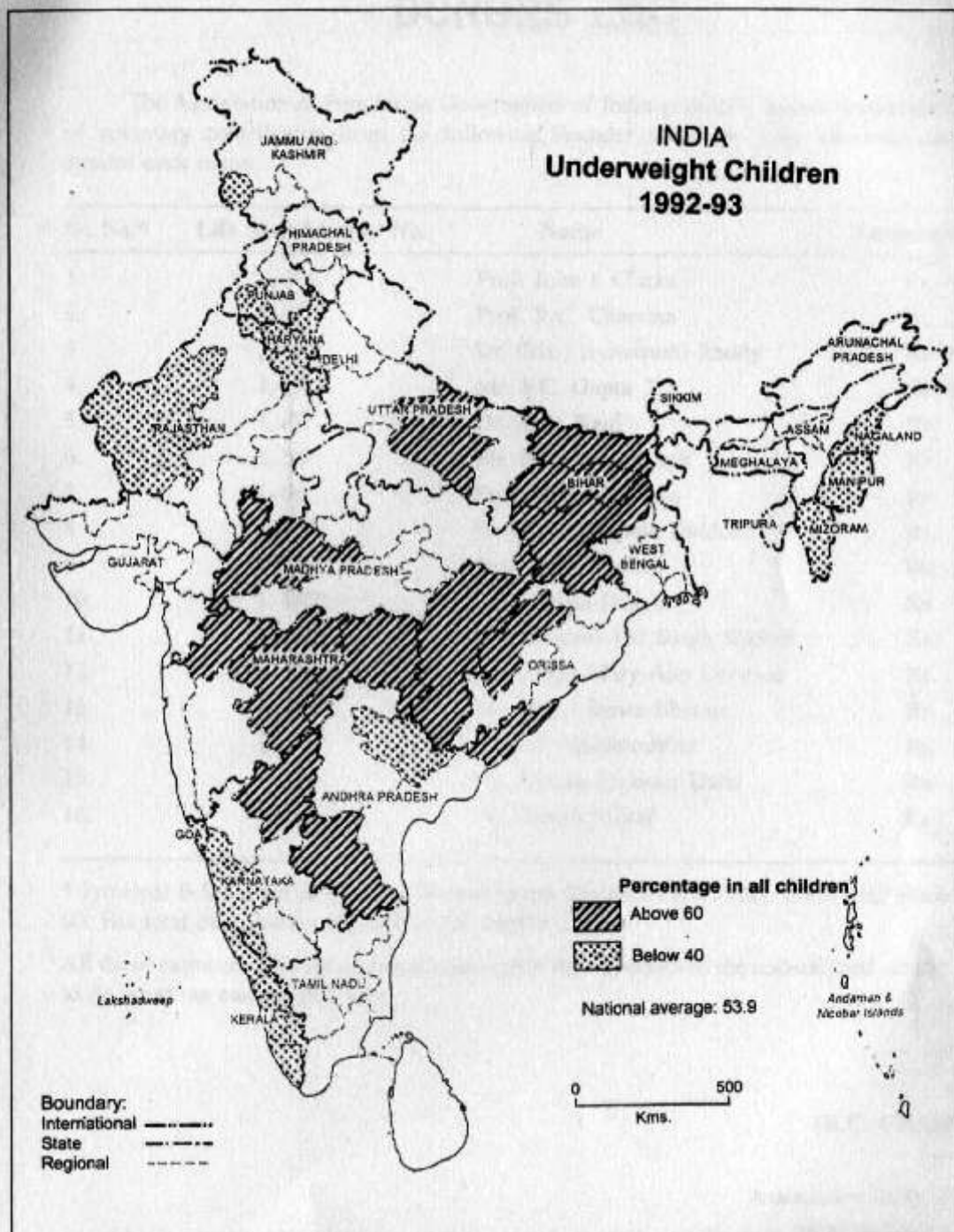


Map 5

**Table 6: India, Ranking of States and Natural Regions by Underweight Children, 1992-93**

State	Percentage of such children	Rank	Natural region	State	Percentage of such children	Rank
Bihar	62.2	1	Chhattisgarh and Bastar	Madhya Pradesh	67.7	1
Madhya Pradesh	60.9	2	Malwa Plateau	Madhya Pradesh	63.6	2
Uttar Pradesh	58.9	3	Khandesh	Maharashtra	63.6	3
West Bengal	57.9	4	N Plain	Bihar	62.7	4
Maharashtra	54.6	5	NE Plateau	Karnataka	62.6	5
Karnataka	53.4	6	S Plateau	Bihar	62.5	6
Orissa	52.6	7	Narmada valley	Madhya Pradesh	62.0	7
Andhra Pradesh	51.7	8	North Coast	Andhra Pradesh	61.7	8
Assam	50.2	9	W Plain	West Bengal	61.6	9
Gujarat	49.4	10	Vidharbha	Maharashtra	61.6	10
Tamil Nadu	49.1	11	S Plain	Bihar	61.2	11
Tripura	48.8	12	Rayalaseema	Andhra Pradesh	60.9	12
Himachal Pradesh	48.6	13	Oudh Plain	Uttar Pradesh	60.5	13
Punjab	45.5	14	Tei-Mahanadi Region	Orissa	60.0	14
Meghalaya	44.4	15	S Uplands	Uttar Pradesh	59.1	15
Jammu and Kashmir	43.9	16	Bhopur Plain	Uttar Pradesh	58.7	16
Rajasthan	41.7	17	NE Plain	Uttar Pradesh	57.9	17
Arunachal Pradesh	40.4	18	SW Plain	Uttar Pradesh	57.7	18
Haryana	37.6	19	N Bengal	West Bengal	56.5	19
Goa	35.1	20	S Delta	West Bengal	56.3	20
Nagaland	28.8	21	N Hills	Uttar Pradesh	56.2	21
Manipur	28.8	22	NW Uplands	Madhya Pradesh	55.6	22
Kerala	28.5	23	NW Plateau	Karnataka	54.9	23
Mizoram	27.0	24	Banas-Chambal Basin	Rajasthan	54.6	24
			S Plateau	Orissa	53.9	25
			Desh	Maharashtra	53.8	26
			N Hills	Orissa	53.8	27
			E Plain	Gujarat	53.6	28
			Marathwada	Maharashtra	53.6	29
			Kachchh and N Plain	Gujarat	53.5	30
			NW Valley	Assam	53.2	31
			E Uplands	Tamil Nadu	53.0	32
			Telangana	Andhra Pradesh	52.9	33
			NE Uplands	Madhya Pradesh	52.6	34
			C Plateau	Karnataka	52.1	35
			S Plateau	Karnataka	51.9	36
			Kongunad and Nilgiri	Tamil Nadu	51.2	37
			E valley and Cachar	Assam	51.0	38
			North	Himachal Pradesh	49.9	39
			SE Coast	Tamil Nadu	49.8	40
			Tripura	Tripura	48.8	41
			Sabarmati-Mahi Plain	Gujarat	48.6	42
			Coats and Delta	Orissa	48.5	43
			NW Plain	Punjab	48.2	44
			E Plain	Punjab	48.0	45
			SW Valley	Assam	47.1	46
			South Coast	Andhra Pradesh	47.1	47
			S Plain	Gujarat	46.6	48
			Saurashtra	Gujarat	45.8	49
			Aravalli Range	Rajasthan	45.4	50
			Konkan	Maharashtra	45.3	51
			East	Jammu and Kashmir	44.9	52
			South	Himachal Pradesh	44.7	53
			N Arid Plain	Rajasthan	44.4	54
			Meghalaya	Meghalaya	44.4	55
			Coromandel	Tamil Nadu	43.9	56
			Bist Doab	Punjab	43.8	57
			SE Plain	Haryana	41.7	58
			Delhi	Delhi	41.6	59
			Arunachal Pradesh	Arunachal Pradesh	40.4	60
			West	Jammu and Kashmir	39.7	61
			Malenad and Coast	Karnataka	39.5	62
			S Plain	Haryana	38.6	63
			S Plain	Punjab	38.4	64
			S Malabar and W Hills	Kerala	38.2	65
			Godavari Depression	Andhra Pradesh	37.5	66
			C Plain	Haryana	36.8	67
			Goa	Goa	35.1	68
			NE Plain	Haryana	33.9	69
			Nagaland	Nagaland	28.8	70
			Manipur	Manipur	28.8	71
			Mizoram	Mizoram	27.0	72
			South Coast	Kerala	25.6	73
			C Coast	Kerala	24.3	74
			N Malabar	Kerala	23.8	75
			S Arid Plain	Rajasthan	14.0	76
<b>Correlates of Underweight Children (Data by 76 Natural Regions)</b>						
<b>Correlates</b>	<b>Correlation Coefficient</b>					
Joint households	: +0.38					
Consanguinity	: +0.19					
Total fertility rate	: +0.18					
Female literacy rate	: -0.53					
Mean age at marriage of females	: -0.52					
Separate place residence couples	: -0.16					
Source	See text. Data not available for Sikkim and all Union Territories, barring Delhi.					





Map 6