Long term collaboration between

Centre for Ecological Sciences, Indian Institute of Science, Bangalore
and
Anthroplological Survey of India, Government of India
on

Multivariate Statistical Analysis

of the data generated under

The People of India Project

An Interim Report

May 1996

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PREFACE

This is an interim progress report, based on the work carried out under the collaborative project "Multivariate Statistical Analysis of Data Generated under the Project People of India", between Anthropological Survey of India and the Centre for Ecological Sciences, Indian Institute of Science, Bangalore. It has been divided into four sections as follows :

1. Correlates of the Desired Family Size amongst Indian Communities 2-28

2. Bride-price and Dowry systems in South Indian Communities 29-36

3. Dependence of People of India on Biological Resources 37-42

4. Cultural Diversity of Meghalaya : A Preliminary Analysis 43-70

The first section deals mainly with the choice of suitable statisitical methodology for the multivariate analysis of the traits data. The complexity of the data was such that the best choice was not self-evident. We therefore held several discussions with Indian experts. Based on their suggestions, the desired family size was chosen as a sample trait for exploring the different statistical techniques. This is a very important exercise, being the model for the analysis of many other traits. It was therefore felt that obtaining an independent opinion from international experts would be a worthwhile undertaking. To this end, we had submitted the manuscript (section 1) to a team of international experts in statistics as well as demography, and based on their recommendation, it has been accepted for publication by in the Proceedings of the National Academy of Sciences (USA). The second section employs the methodology developed in section 1 to analyse the traits associated with bride-price and dowry.

The third section introduces the idea of a population based analysis. The sample traits chosen here are the occupations dependent on the natural biological resources. In this analysis, we have focussed on the North-Eastern region since the population data set for these states was relatively complete. This section discusses the relative magnitudes of community based and population based estimates, and comments on the reliability of these figures.

The fourth and the last section uses the district-wise population data for the state of Meghalaya and presents a district wise analysis of the communities and traits.

The finalization of the methodology took considerable time. However, we now feel confident that we have the necessary statistical techniques, and computer programs, to complete the remaining analysis in a relatively short time. Obtaining the district-wise population figures was also a difficult task, and we are happy to state that this data set is also almost finalized, and the analysis could be completed in a reasonably short time.

CORRELATES OF THE DESIRED FAMILY SIZE AMONGST INDIAN COMMUNITIES

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ABSTRACT

The People of India data base of the Anthropological Survey of India documents 631 cultural, ecological, and economic traits of the 4635 communities to which the entire Indian population is assigned. Focussing on 1342 communities of South India, we look for correlates of low (1 or 2) and high (4 or more children) desired family size (dfs) reported as the norm for any given community by key informants. We find 10 cultural and 18 economic traits to be significantly correlated to high dfs and 21 cultural and 9 economic traits to low dfs. The economic traits so identified are compatible with high family size being desired by parents who have little capability of investing in quality of offspring, but whose children contribute economically from an early age. In contrast, communities desiring low family size are part of the modern intensive agriculture - organized industry - services sector and invest heavily in educating the children. A composite index based on 27 economic traits (CEI) has a high predictive value with respect to the dfs for the entire set of 4635 Indian communities. The 31 cultural traits highly correlated to high or low dfs constitute five clusters that can be identified as characterising scheduled tribes, scheduled castes, rural and landless lower castes, urban upper castes and moslems. While economic traits have similar influence on DFS within each of these ethnic categories, moslems demonstrate a significantly higher DFS for lower values of CEI.

INTRODUCTION

Segmented into thousands of communities, India harbors one of the most culturally heterogeneous of human societies. Many members of a significant proportion of Indian communities still pursue traditional, hereditarily prescribed modes of subsistence; these range over trapping birds, shifting cultivation, artisanal fishing and nomadic sheep keeping to mat weaving, pottery and dispensing herbal medicines. At the same time Indian society is rapidly industrializing, with large tracts of land under intensive chemicalized agriculture and a substantial modern industrial and services sector. The interaction between the traditional and the modern in this diverse society is a matter of great scientific interest. The Anthropological Survey of India has recently concluded a major ethnographic survey project (1) termed the "People of India" (POI) which provides excellent material (2-4) in many ways superior to the Human Relations File at the Yale University for such an exploration (5). We attempt to do so with reference to the desired family size reported as a community norm focussing on 1342 communities of the four southern states of India.

MATERIALS AND METHODS

The POI project, conducted between October 1985 and March 1992 aimed at preparing a basic ethnographic account of all communities of India (1). For this purpose the entire Indian population was assigned to 4635 communities distributed over 32 states and union territories. A whole series of previous ethnographic surveys, district gazetteers and community wise censuses compiled under the British rule, largely between 1881 and 1941, and the lists of scheduled and socially backward communities compiled following independence in 1947 formed the basis for

the identification of these 4635 communities. Indian society is primarily made up of endogamous caste groups variously estimated to number between 40,000 to 60,000 (6). These caste groups have tended to retain their identity even after conversion to Islam or Christianity. A number of endogamous tribal groups constitute another significant component of this segmented society. In modern times these endogamous groups have tended to merge into larger clusters, with gradual loss of their traditional basis of division based on occupation and hierarchy, and acquiring newer meaning as politically organized interest groups. The 4635 POI communities represent such clusters of erstwhile endogamous groups with the bulk of the population living in contiguous geographical territories, with broadly shared patterns of traditional occupation and socio-economic status.

The POI project set out to describe all of these communities; their histories and cultural traits; how they perceive themselves today and the changes in many facets of their life especially since independence in 1947. This information was generated on the basis of group interviews as well as interviews of 24951 key informants in 1011 cities and towns and 3581 villages distributed over 421 out of a total of 465 districts of the country by 500 trained scholars of whom 284 belonged to the Anthropological Survey of India and 216 to various Universities and research organizations (1). On the basis of these interviews and all available literature, both administrative and scholarly, the investigators prepared a descriptive account of all the communities focusing on ecology and resource use, languages, social organisation, interactions and linkages with other communities, economy, occupation and response to modern developments. These descriptive accounts formed the basis of a computerized data base recording which of a possible total of 891

traits is present in each community (1, 7). Inter-informant and inter-locational variation was deemed to be within acceptable limits for 668 of these traits. We further concentrate our analysis at the initial stage to 1342 communities from the 5 southern states of Karnataka, Kerala, Andhra Pradesh, Tamilnadu and Pondicherry as they have been much less affected by large scale migrations. To begin this exploration we focus on the trait of desired family size (8) since we already understand a great deal of the nature of variation in this trait thanks to a long series of studies, culminating in the National Family Health Survey (see, for example, 9-11). Conducted over 1992-1993, by the International Institute of Population Sciences, Bombay in collaboration with the population research centers of the different states and union territories in India, this survey involved interviews of 89,777 ever married women of ages 13-49 from randomly selected households throughout the country for a number of traits focussing on health and fertility, including desired family size. Results of the National Family Health Survey show that desired family size as reported at the household level is an excellent indication of fertility. The fertility actually achieved for the broader group to which the households belong tends to be a little higher, but group level differences in actual and desired family size are invariably in concordance. The survey identifies the women and their households only in terms of broad categories based on religion, status as scheduled castes and tribes, as well as levels of education. The results of this survey then provide an excellent way of cross-checking the reliability of POI information. In turn, the POI data permit us to enrich our understanding of this significant trait through far more extensive intercommunity comparisons.

Of the 1342 south Indian communities 1284 are characterized as indicating one or more the following three categories as the desired family size (DFS) : 1 or 2 children, 3 children, 4 or more children; no information on this trait being available for the other 58 communities. More than one of these choices was recorded by 55 communities. Additionally 7 communities were considered to be heterogeneous on other criteria such as multiplicity of mother tongues. We therefore decided to focus on the remaining 1222 communities for further analysis. These 1222 communities record the presence of 631 out of 668 traits. It is this data set of occurrence of 631 traits for 1222 south Indian communities indicating one of three choices of DFS that constitutes the primary basis of our analysis.

RESULTS AND DISCUSSION

CORRELATION AMONGST TRAITS

Of these 1222 communities the DFS is 1 or 2 children for 250, 3 for 813 and 4 or more for 159 communities. These communities also record the occurrence of 628 other traits. We looked for significance of departure in the proportion of communities exhibiting these traits associated with one of the three DFS values. For DFS value of 3 children, there is no significant departure from the proportion in the entire data set of 0.665 (813/1222) at 1% level by the X^2 test; while the proportions did differ significantly for a number of traits associated with the DFS of 1 or 2 children as well as 4 or more children. We therefore focus on the 409 communities indicating these DFSs for further analysis. These 409 communities amongst themselves record the occurrence of 595 traits other than DFS. Of these, 368 traits were shown by 20 or more communities. We decided to ignore the 227 traits shown by 20 or less out of 409 communities,

and looked at the significance of departure of proportions in the entire data set employing X^2 test as well as Z test for 5% level of significance using the Bonferroni criterion of 0.05/368 = 0.000135. Such an analysis suggests 58 of these traits as being significantly associated with DFS, 28 with low and 30 with high DFS.

RELATIVE MAGNITUDE OF INFLUENCE

We are further interested in estimating the relative magnitude of the influence of these associated traits on DFS, and to ascertain if the traits occur in meaningful clusters. The relative magnitude of the influence of the associated traits could be estimated in several different ways. These include (a) proportion of the communities showing that trait expressing low (or high) DFS (b) correlation coefficient R between the trait and low (or high) DFS (c) logarithm of the ratio of odds : (high DFS / low DFS communities amongst those showing trait i divided by the high DFS / low DFS communities which do not report the trait i). (d) weights given to the trait in the first principal component obtained from a principal component analysis of the 409 x 58 data matrix. (The first principal component explains 21.89% of the variation.) As table 1 shows the relative magnitudes of the influence of the traits estimated by these four ways are by and large consistent. That a trait relating to women's education tops this table is in consonance with the earlier findings (12, 13). We have therefore arranged the 58 traits in descending order of the sum of the ranks based on these four criteria.

PARENTAL SELF INTEREST

It is of interest to assess whether the association of this set of 58 traits can be explained on the basis of some plausible model of determinants of DFS. The most appealing model in this context postulates that parents view children either as consumer goods or producer goods (14, 15) depending on the kind of economy the household is involved in (12, 16). Where earnings are dependent on the acquisition of a high level of technical skills, long periods of investment in the training of children are essential before they can be economically productive. Children are therefore not in a position to contribute to the household economy over most of the parents' economically active lifespan. Parents then view offspring as consumer goods, as a source of personal satisfaction with a relatively small number leading to a saturation in the level of satisfaction. Furthermore, in such a system the parents would be faced with a trade off in the number and quality (15, 17, 18) or extent of investment per child. Since the future earning capabilities of the children improve with increasing investment of time and resources in training the parents are motivated to produce a relatively small number and invest substantially in each of them.

Parents belonging to economic strata where earnings are not based on a long period of formal acquisition of technical skills tend to view children as producer goods capable of adding to the family's income from an early age. In such a situation parents are not in a position to invest very much in the children to enhance their earning capabilities; but are instead in a position to use them to add to the family's income. Parents would benefit from producing a large number of children in such a situation, and would therefore desire large families.

Several of the 58 traits significantly associated with small or large DFS are consistent with such a model of parental pursuit of self interest (Table 1). Four of the 28 traits associated with low DFS pertain to tendency of the community to be favorably inclined towards formal education for girls and to educate both boys and girls through college or beyond. Two of the 30 traits associated with high DFS similarly pertain to unfavorable attitude towards girls' education and girls studying only through primary school level. Eight traits associated with low DFS indicate involvement of many members of the community in modern professions requiring high levels of technical training such as administrators, scholars, engineers, entrepreneurs, or employment in the industrial sector. In contrast 3 of the traits associated with high DFS indicate the dependence of community members on unskilled labour and especially child labour; while 3 other traits indicate their involvement in traditional occupations not dependent on formal education such as trapping birds, hunting and basketry. Six other traits associated with low DFS point to the involvement of the community in either intensive agriculture and urban sectors, while 2 pertain to acceptance of modern family planning methods. Thus as many as 27 of the 58 traits seem consistent with DFS being a parental decision in self interest (Fig. 1). The other 31 are cultural traits linked less directly to economic behaviour. Their association with DFS can be interpreted only in the context of the Indian social organization.

BEHAVIOUR OF SOCIAL CONSTITUENTS

The two broad divisions of the Indian society are the tribals who have been outside the fold of organized religions till recent times, and the mainstream society within the folds of Hinduism, Christianity and Islam. Over centuries the tribals have been slowly absorbed at lower levels in

the Hindu hierarchy, in recent decades large numbers of them have been converted to Christianity. Nevertheless they retain rather separate identity as well as a special constitutional status as scheduled tribes. There are 636 (13.7%) POI communities so classified. Traditionally the Hindu communities have been assigned to five hierarchical categories, or varnas. In descending order of social status they include Brahmans or priests (362, 7.8%), Kshatriyas or warriors (737, 15.9%), Vaisyas or traders (434, 9.4%), Sudras or peasants and artisans (1348, 29.1%), and the fifth erstwhile untouchable group now largely making up the scheduled castes (751, 16.2%). The numbers in the brackets indicate numbers and percentages of POI communities. The scheduled caste is of course, an administrative category, and a few of the scheduled caste groups also claim Kshatriya or Shudra varna. On conversion to Islam or Christianity, the community divisions have tended to remain intact, along with their assigned social status. POI recognizes 584 (12.6%) Moslem communities of which 5 belong to scheduled castes and 19 to scheduled tribes and 339 (7.3%) Christian communities with 21 Scheduled castes and 149 Scheduled tribes. All of these communities inside and outside the fold of Hinduism still tend to recognize a place in social hierarchy, and six of the POI traits are self perception of the community's status as high, medium or low and other's perception of the community's status as high, medium or low.

In the stratified society of India a community's dependence on either modern occupations demanding a high level of investment in the offspring, or on unskilled labour promoting child labour is strongly related to its position in the traditional social hierarchy and to its traditional hereditary occupation. Communities traditionally enjoying a high social status and involved in

of technical training. As expected these are traits associated strongly with low DFS. Linkage groups (C) and (D) include traits associated with high DFS. Group C reflects involvement of communities in unskilled labour including child labour coupled to low motivation to educate

learned professions, in land ownership or trade today tend to dominate the modern sector and show low DFS; communities traditionally relegated to a lower social status and involved in hunting, gathering, farm labour or artisanal occupations tend today to subsist largely by unskilled labour and show high DFS. This is consistent with the findings of the National Family Health Survey that scheduled castes everywhere show a higher desired family size as well as higher levels of fertility (9-11, 13). High and low status communities in the Indian society possess characteristic kinship patterns, rituals, food taboos and cultural practices. In consequence, a number of these are strongly associated with low or high DFS (Fig. 2).

TRAIT CLUSTERS

We examined whether the 27 economic and 31 cultural traits could be objectively aggregated into clusters. For every pair of traits, the Pearson product-moment correlation coefficient (based on the joint occurrence of these traits in the 409 communities) was taken to be a measure of association, and the 27 x 27 (or 31 x 31) matrix was subjected to hierarchial cluster analysis using the complete linkage algorithm. Other measures of distance (e.g. Euclidian) and algorithms (e.g. single linkage) also led to very similar clusters, suggesting this grouping to be robust. As Figure 1 shows, the 27 economic traits form 4 distinct linkage groups. The linkage group (A) suggests that landowning communities practicing irrigated agriculture are motivated to practice modern family welfare (= planning) methods and desire small families. This may in part be related to the need for considerable technical training for successful pursuit of intensive agriculture, and desire not to further reduce already quite low levels of landholding. The linkage group (B) reflects involvement in modern industries and services sectors dependent on high levels

COMPOSITE ECONOMIC INDEX (CEI)

Most of the 58 traits strongly linked to low or high DFS can thus be reasonably interpreted as a consequence - either direct or indirect - of the decision by parents pursuing economic self interest. Twentyseven of the 58 traits can be visualized as directly related to the nature of economic pursuits of the majority of community members and thereby influencing the desired family size. Notably enough none of these traits is exclusively associated with low or high DFS; a small proportion of communities with girls studying beyond college level still prefer high DFS, and a small proportion of communities in which child labour is prevalent still report preference for low DFS. Nor, as seen above, are we in a position to assign clear cut ranks in terms of relative magnitude of influence to this set of traits. It may then be more appropriate to rank the communities on the basis of a composite index involving these 27 economic traits, leaving aside the other 31 cultural traits whose association is more in consequence of historical accidents. We can therefore rank any community by assigning it a composite score with +1 for the 18 economic traits associated with low DFS, and -1 for the 9 economic traits associated with high DFS (see Table 1).

This score has been constructed on the basis of 409 south Indian communities showing a unique family size preference for either 1 or 2, or 4 or more children. Its robustness may be tested by applying it to the entire set of 4635 POI communities. Of these 3925 communities state a unique DFS, either 1 or 2, 3, or 4 or more. The computed composite economic index (CEI) for these 3925 communities ranges over -6 to +18. Figure 3 shows the proportion of communities exhibiting various desired family sizes for a given value of CEI. There is a significant positive

correlation (r = 0.9) between CEI and low DFS, and a significant negative correlation (r = 0.96) between CEI and high DFS. The proportion of communities desiring 3 children increases rapidly between CEI of -6 and 0 ; more slowly between CEI of 0 and 10, and fluctuates at higher CEI values. CEI is evidently of broad explanatory value in terms of demographic behaviour of Indian communities.

Figure 4 displays mean DFS (computed by equating 1 or 2 with 2, and 4 or more with 4) as a function of mean CEI for the various social categories for the entire set of 3925 community elements. The correlation amongst social status, economic status and desired family size is clearly evident. In terms of CEI, Moslem communities are close to the fourth or Shudra category, and Christian communities to the second or Kshatriya category of Hindus. This reflects the known historical bias during the course of conversion to these religions. What is notable, however, is that while the observed DFS for Christians is close to Hindu communities with an equivalent value of CEI, the observed DFS for Moslem communities appears to be significantly higher than that for the Hindu communities with a similar mean value of CEI (see also 19, 20). This is consistent with the findings of the National Family Health Survey (9-11, 13).

Figure 5 shows mean desired family size as a function of CEI separately for Hindu, Christian and Moslem communities. In all three cases mean DFS declines with increasing CEI, the slopes being significantly negative ($p < 0.01$) for Hindu, Christian as well as Moslem communities. Clearly then the Indian communities respond to economic motivation in a similar fashion irrespective of their religious affiliation. However, while the slopes of the curves for Hindus and Christians are

not significantly different from each other, that for Moslem communities is significantly higher in magnitude than either ($p < 0.05$). As a result, with increasing CEI, the DFS for Moslem communities comes down at a faster rate than the Hindus or Christians. Moslem communities at the upper end of the economic hierarchy thus have similar preferences for small families as Hindu and Christian communities. However they tend to prefer larger families at a significantly greater rate towards the lower level of the economic hierarchy.

This may reflect the fact that Hindu communities with low levels of CEI are much more influenced by the ideal of maintainance of low family size so vigorously promoted by the state (12, 21). It is possible that Moslem communities at the lower end of the social and economic hierarchy feel insecure and perceive their group interests being advanced through larger numbers. Alternatively, they may have lower levels of access to opportunities to move into jobs in the organized sector demanding higher levels of investment into training of their children. It is notable that Christian communities do not behave in this fashion. This may be related to the virtual absence of any social tension amongst Hindu and Christian communities, and the special educational opportunities provided by Christian institutions. But, by and large this first comprehensive picture of the demographic behaviour of Indian communities suggests that this behaviour is moulded by the same economic and social determinants of the parental perceptions of self-interest as are prevailing the world over (16, 21-24).

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Table 1. Relative magnitude of influence of 58 traits significantly correlated with either low (top 28) or high (bottom 30) desired family size. The traits are listed in descending order [Column A] with respect to the sum of ranks as determined by (i) proportion of communities with low dfs [Column D] (ii) correlation coefficient [Column E] (iii) log odd ratio [Column F] (iv) weights for the first principal component [Column G]. The 58 traits are classified as cultural (C) if primarily determined through tradition of the community and economic (E), if closely linked to status of the community in the present day economy [Column B]. Column H is the sum of the ranks as indicated in columns D, E, F and G.

A	B	C	D	E	F	G	H
1	E	GIRLS STUDY UPTO POST-GRADUATE LEVEL	57	56	56	52	221
2	C	BRAHMAN VARNA	58	58	57	42	215
3	C	VEGETARIAN COMMUNITY	54	53	54	43	204
4	E	INDUSTRY(CONTINUING) AS OCCUPATION	56	55	55	37	203
5	E	BOYS STUDY UPTO POST-GRADUATE LEVEL	49	49	49	55	202
6	E	INDUSTRY (NEWLY ACQUIRED) AS OCCUPATION	55	54	53	36	198
7	C	OTHER'S PERCEPTION OF THE COMMUNITY IS HIGH	53	46	46	48	193
8	E	SCHOLARS FOUND IN THE COMMUNITY	44	45	45	58	192
9	E	SAVINGS FAVOURED	35	50	50	56	191
10	C	THREAD-WEARING CEREMONY OBSERVED	52	48	48	41	189
11	C	FIRST FEEDING OF CEREALS (ANNAPRASHAN) OBSERVED	50	51	51	35	187
12	E	FAMILY PLANNING PROGRAMMES FAVOURED	38	57	58	33	186
13	C	CREATIVE ARTISTS ARE FOUND IN THE COMMUNITY	51	47	47	40	185
14	C	DISPOSAL OF BONES IN WATER	45	44	44	51	184
15	E	GIRLS STUDY UPTO COLLEGE LEVEL	46	41	41	50	178

16 C	KANYADAN (A MARRIAGE RITUAL) EXISTS	47	42	42	47	178
17 E	MAINLY LAND-OWNING COMMUNITY	48	40	40	44	172
18 E	ENGINEERS/DOCTORS FOUND IN THE COMMUNITY	36	39	39	57	171
19 E	ADMINISTRATORS FOUND IN THE COMMUNITY	41	37	37	54	169
20 E	PREFER MODERN FAMILY PLANNING METHODS	32	52	52	32	168
21 E	FORMAL EDUCATION IS FAVOURABLE FOR GIRLS	33	43	43	49	168
22 E	WATCH TELEVISION	37	38	38	53	166
23 E	MEMBERS IN DEFENCE SERVICE FOUND IN THE COMMUNITY	43	36	36	45	160
24 E	ENTREPRENEURS/BUSINESSMEN FOUND IN THE COMMMUNITY	31	35	35	46	147
25 C	LEADERSHIP AT REGIONAL LEVEL	42	34	34	34	144
26 E	SETTLED CULTIVATION(TRADITIONAL)	39	32	32	38	141
27 C	DEAD IS CREMATED	34	33	33	39	139
28 E	IRRIGATION THROUGH CANALS	40	31	31	31	133
29 C	POLYGYNY:NON-SORORAL	21	30	30	22	103
30 C	SORORATE:JUNIOR ALLOWED	27	28	28	20	103
31 C	CONSUMMATION CEREMONY AT GROOM'S RESIDENCE	23	25	25	21	94
32 C	JOWAR (SORGHUM) CONSUMED	20	29	29	13	91
33 E	LABOUR(TRADITIONAL) AS OCCUPATION	17	27	27	19	90
34 E	GIRLS STUDY UPTO PRIMARY LEVEL	28	23	23	14	88
35 C	BRIDE-PRICE(CASH)	16	26	26	17	85
36 E	CHILD LABOUR EXISTS	26	21	21	7	75
37 E	FORMAL EDUCATION IS PARTLY FAVOURABLE FOR BOYS	15	24	24	11	74
38 C	DIVORCE WITH SOCIAL APPROVAL	24	22	22	5	73
39 C	SACRED SPECIALISTS FOR MARRIAGE CEREMONY	11	18	18	24	71
40 C	BEEF CONSUMED	19	20	20	12	71
41 E	LANDLESS COMMUNITY	25	19	19	6	69
42 E	LABOUR(CONTINUING) AS OCCUPATION	29	14	14	8	65
43 C	INDIVIDUAL AFFILIATION TO PIR	9	11	12	29	61

44	C	MARRIAGE WITH MOTHER'S SISTER'S DAUGHTER ALLOWED	8	10	10	28	56
45	C	FAMILY AFFILIATION TO PIR	7	9	9	30	55
46	C	WOMEN TAKE ALCOHOLIC DRINKS OCCASIONALLY	13	16	16	9	54
47	C	MEN TAKE ALCOHOLIC DRINKS REGULARLY	14	15	15	10	54
48	C	SELF-PERCEPTION OF THE COMMUNITY IS LOW	18	17	17	2	54
49	C	SCHEDULED CASTES	10	13	13	16	52
50	C	MEHAR (BRIDE PRICE) : PROMISED FOR FUTURE	5	8	8	27	48
51	C	OTHER'S PERCEPTION OF THE COMMUNITY IS LOW	22	12	11	1	46
52	C	CIRCUMCISION CEREMONY FOR BOYS CONDUCTED	6	6	6	26	44
53	C	WIDOW REMARRIAGE ALLOWED	30	4	4	3	41
54	C	ISLAM (EXCLUSIVE)	3	3	3	25	34
55	C	WOMEN TAKE ALCOHOLIC DRINKS	12	7	7	4	30
56	E	HUNTING AND GATHERING(TRADITIONAL) OCCUPATION	4	5	5	15	29
57	E	ART AND CRAFT : BASKETRY	1	1	1	23	26
58	E	TRAPPING BIRDS & ANIMALS(TRADITIONAL) OCCUPATION	2	2	2	18	24

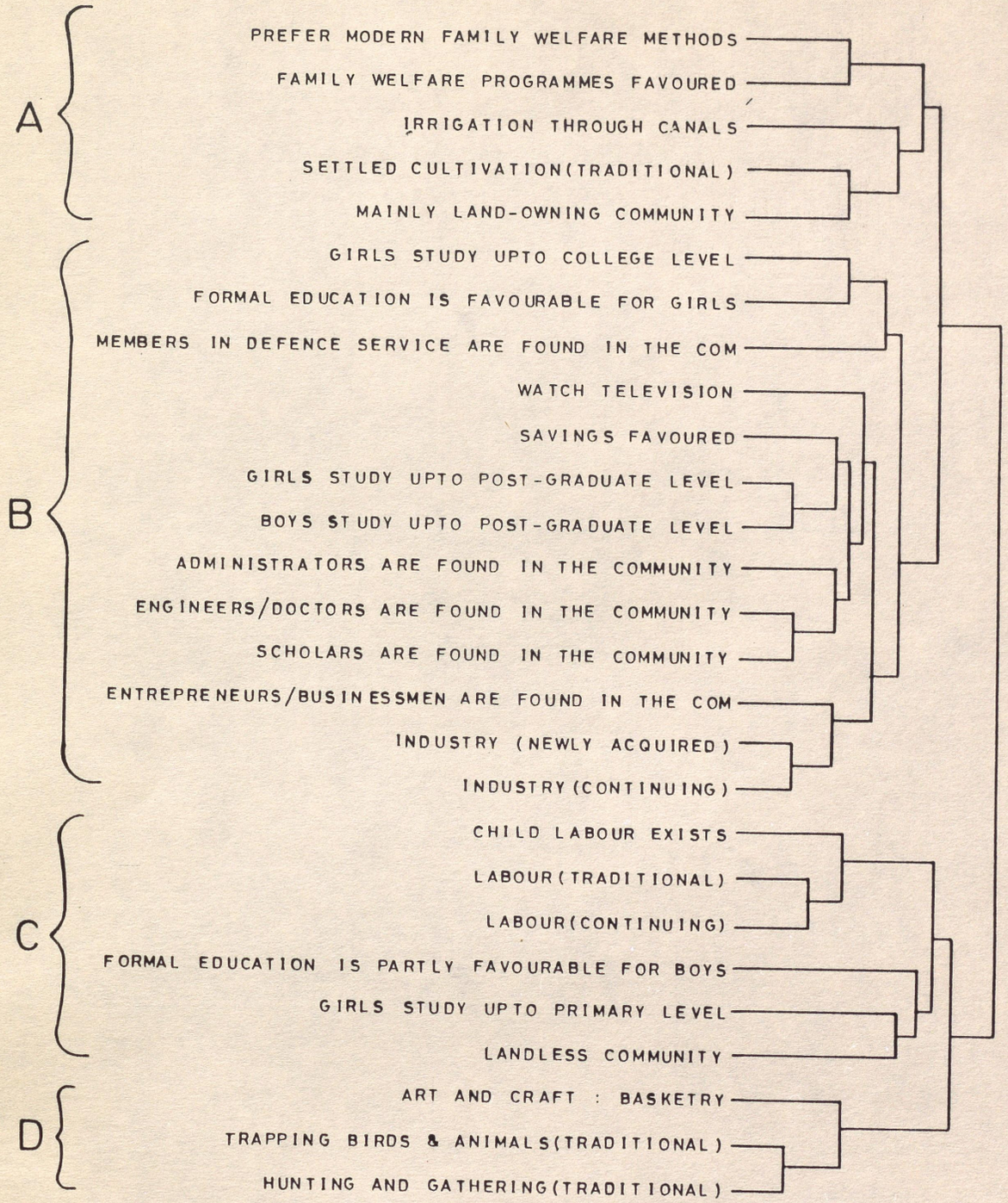
Figure 1. Complete linkage dendrogram of 27 economic traits significantly associated with either low or high desired family size.

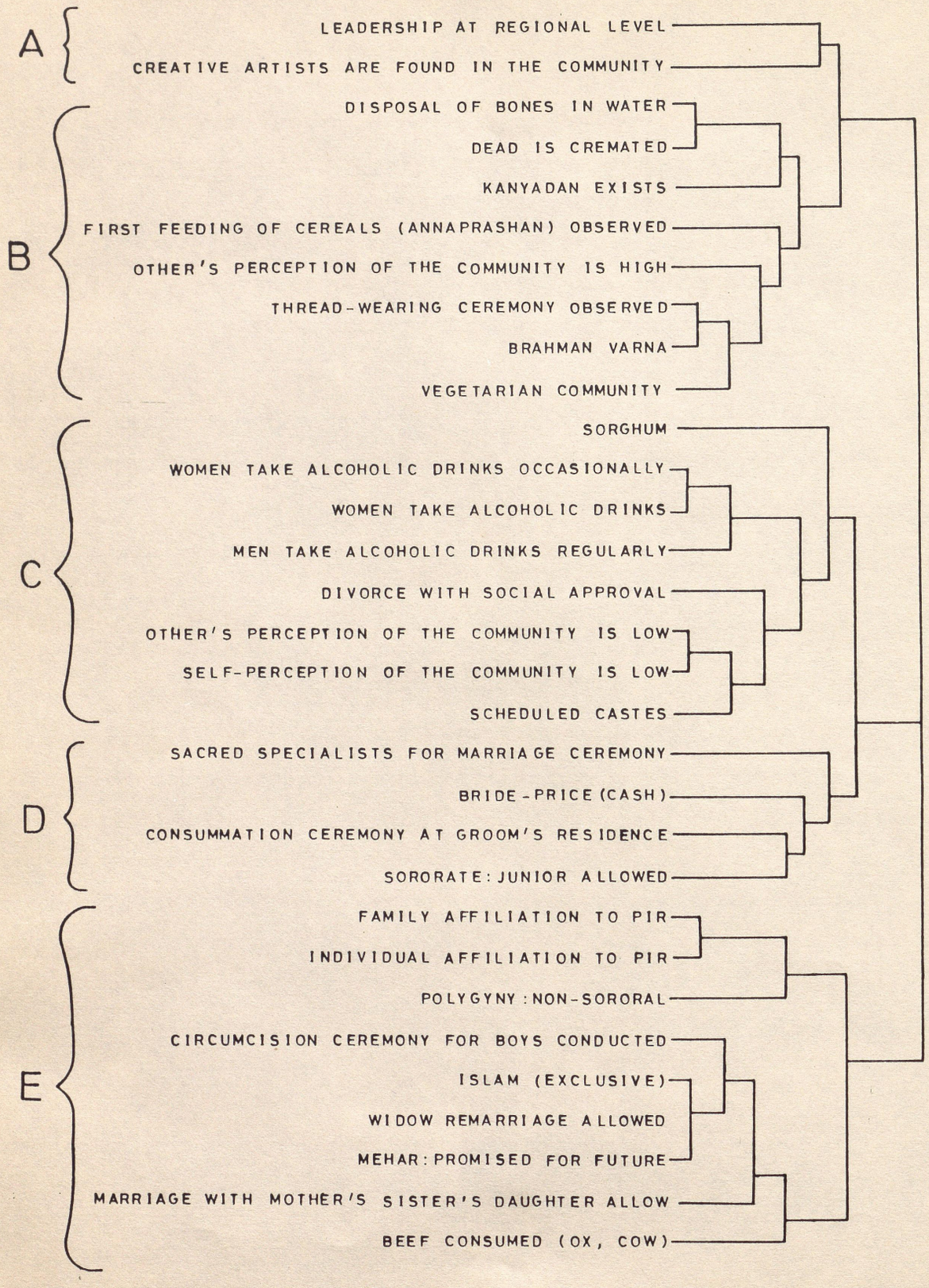
Figure 2. Complete linkage dendrogram of 31 cultural traits significantly associated with either low or high desired family size.

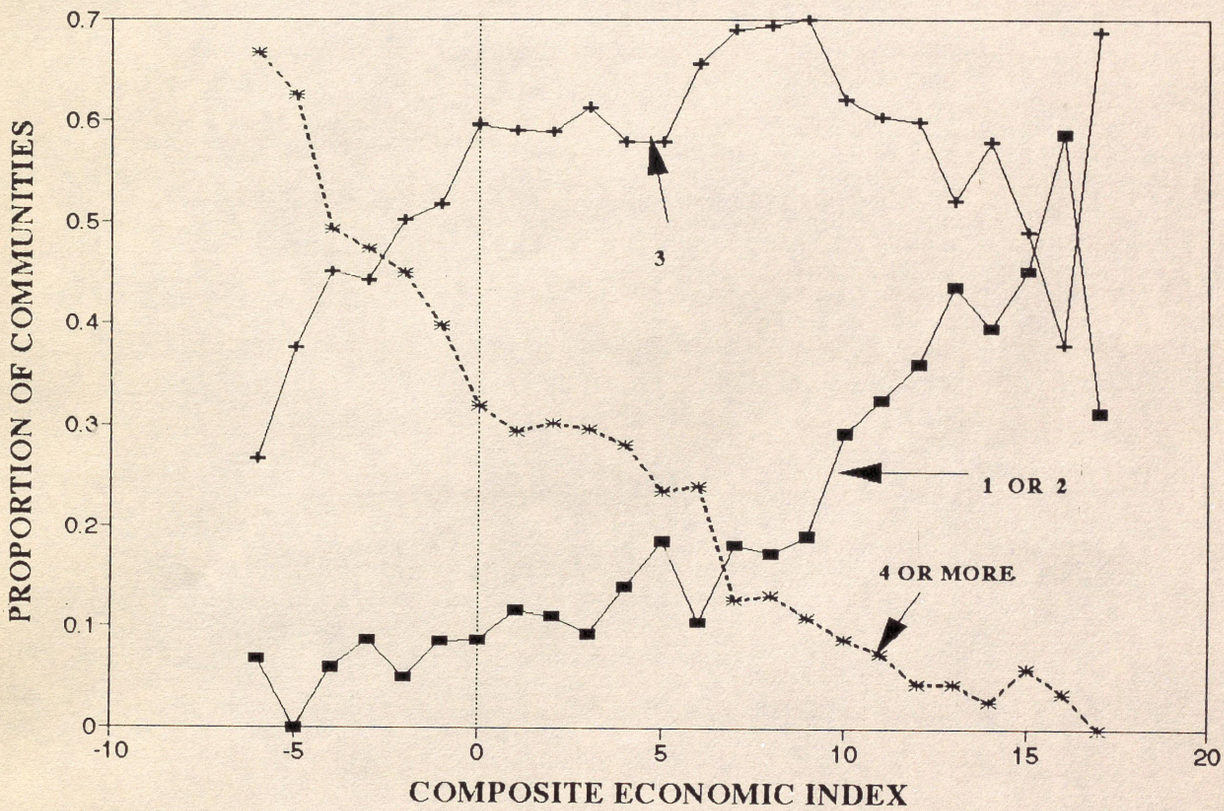
Figure 3. Proportion of 3925 Indian communities showing preference for 1 or 2, 3, or 4 or more children over the entire range of values of composite economic index.

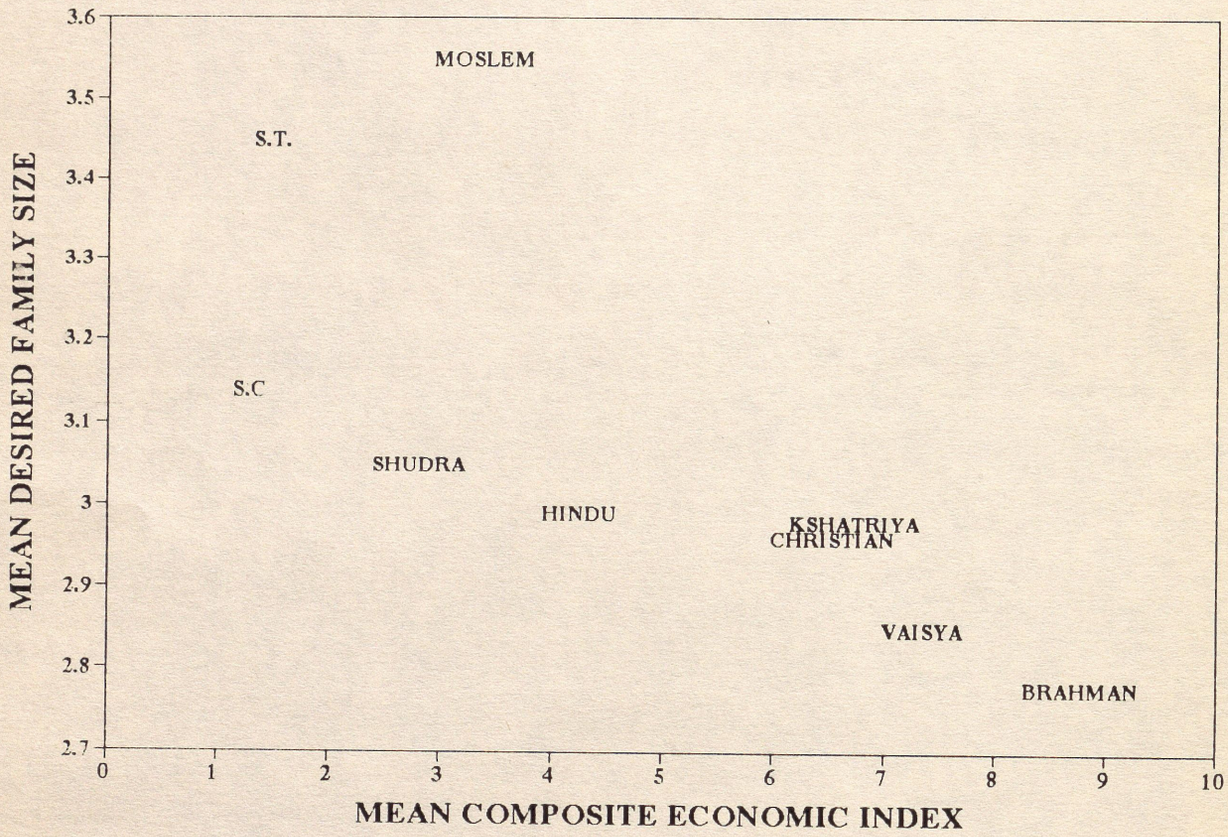
Figure 4. Desired family size as a function of the composite economic index for the major constituents of the Indian society. Brahman, Kshatriya, Vaisya and Shudra represent in descending order of social hierarchy the four large categories of Hindu communities ranked above the scheduled castes and scheduled tribes. Christians and Moslems represent two religious categories, and include some scheduled castes and tribes.

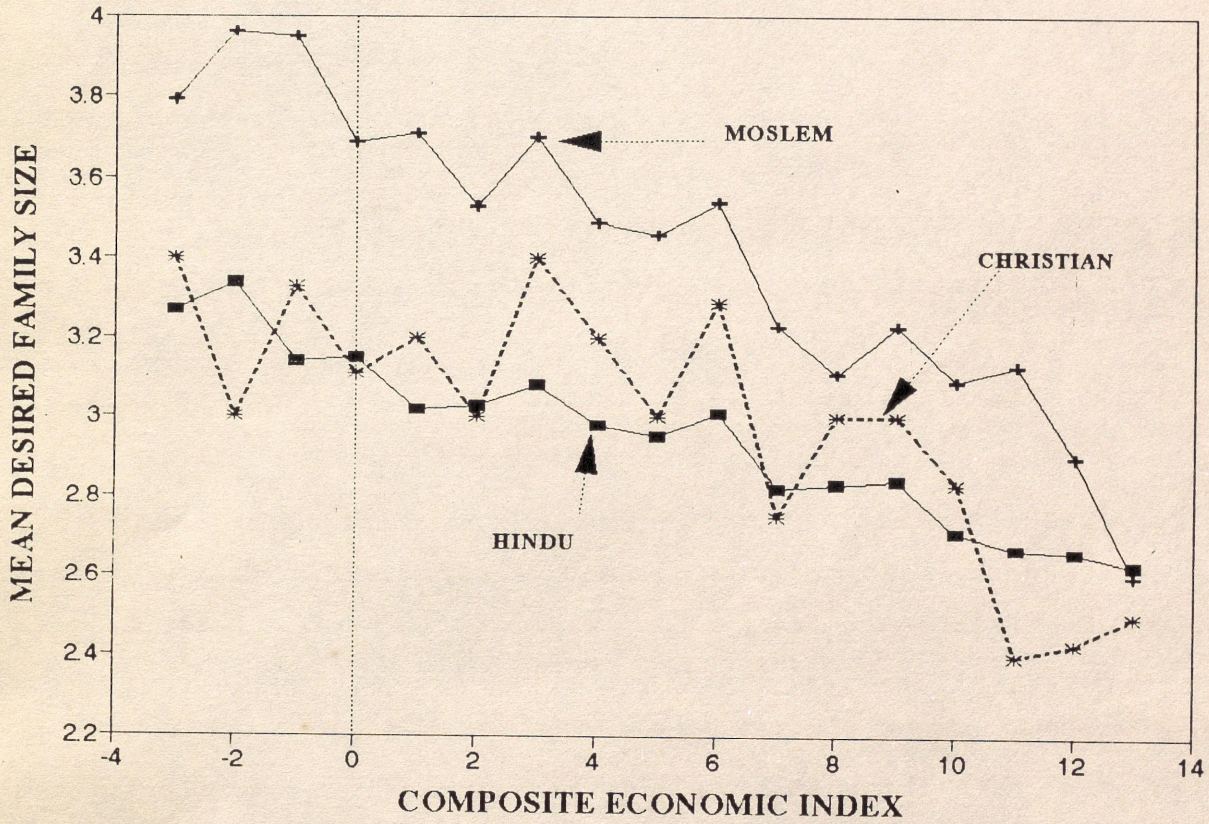
Figure 5. Relationship between the desired family size and the composite economic index for Hindu, Christian and Moslem communities.


A
PREFER MODERN FAMILY WELFARE METHODS
FAMILY WELFARE PROGRAMMES FAVOURED
IRRIGATION THROUGH CANALS
SETTLED CULTIVATION(TRADITIONAL)
MAINLY LAND-OWNING COMMUNITY
B
GIRLS STUDY UPTO COLLEGE LEVEL
FORMAL EDUCATION IS FAVOURABLE FOR GIRLS
MEMBERS IN DEFENCE SERVICE ARE FOUND IN THE COM
WATCH TELEVISION
SAVINGS FAVOURED
GIRLS STUDY UPTO POST-GRADUATE LEVEL
BOYS STUDY UPTO POST-GRADUATE LEVEL
ADMINISTRATORS ARE FOUND IN THE COMMUNITY
ENGINEERS/DOCTORS ARE FOUND IN THE COMMUNITY
SCHOLARS ARE FOUND IN THE COMMUNITY
ENTREPRENEURS/BUSINESSMEN ARE FOUND IN THE COM
INDUSTRY (NEWLY ACQUIRED)
INDUSTRY(CONTINUING)
C
CHILD LABOUR EXISTS
LABOUR(TRADITIONAL)
LABOUR(CONTINUING)
FORMAL EDUCATION IS PARTLY FAVOURABLE FOR BOYS
GIRLS STUDY UPTO PRIMARY LEVEL
LANDLESS COMMUNITY
D
ART AND CRAFT : BASKETRY
TRAPPING BIRDS & ANIMALS(TRADITIONAL)
HUNTING AND GATHERING(TRADITIONAL)


A
LEADERSHIP AT REGIONAL LEVEL
CREATIVE ARTISTS ARE FOUND IN THE COMMUNITY
B
DISPOSAL OF BONES IN WATER
DEAD IS CREMATED
KANYADAN EXISTS
FIRST FEEDING OF CEREALS (ANNAPRASHAN) OBSERVED
OTHER'S PERCEPTION OF THE COMMUNITY IS HIGH
THREAD-WEARING CEREMONY OBSERVED
BRAHMAN VARNA
VEGETARIAN COMMUNITY
C
SORGHUM
WOMEN TAKE ALCOHOLIC DRINKS OCCASIONALLY
WOMEN TAKE ALCOHOLIC DRINKS
MEN TAKE ALCOHOLIC DRINKS REGULARLY
DIVORCE WITH SOCIAL APPROVAL
OTHER'S PERCEPTION OF THE COMMUNITY IS LOW
SELF-PERCEPTION OF THE COMMUNITY IS LOW
SCHEDULED CASTES
D
SACRED SPECIALISTS FOR MARRIAGE CEREMONY
BRIDE-PRICE (CASH)
CONSUMMATION CEREMONY AT GROOM'S RESIDENCE
SORORATE: JUNIOR ALLOWED
E
FAMILY AFFILIATION TO PIR
INDIVIDUAL AFFILIATION TO PIR
POLYGYNY: NON-SORORAL
CIRCUMCISION CEREMONY FOR BOYS CONDUCTED
ISLAM (EXCLUSIVE)
WIDOW REMARRIAGE ALLOWED
MEHAR: PROMISED FOR FUTURE
MARRIAGE WITH MOTHER'S SISTER'S DAUGHTER ALLOW
BEEF CONSUMED (OX, COW)


PROPORTION OF COMMUNITIES
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-10
-5
0
5
10
15
20
COMPOSITE ECONOMIC INDEX
3
1 OR 2
4 OR MORE


MEAN DESIRED FAMILY SIZE
3.6
3.5
3.4
3.3
3.2
3.1
3
2.9
2.8
2.7
MOSLEM
S.T.
S.C
SHUDRA
HINDU
KSHATRIYA
CHRISTIAN
VAISYA
BRAHMAN
0
1
2
3
4
5
6
7
8
9
10
MEAN COMPOSITE ECONOMIC INDEX


MEAN DESIRED FAMILY SIZE
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
-4
-2
0
2
4
6
8
10
12
14
COMPOSITE ECONOMIC INDEX
MOSLEM
CHRISTIAN
HINDU

Bride-price and Dowry systems in South Indian Communities

Introduction

As explained in the previous section, we have been able to arrive at a suitable stastical methodology for analysing the People of India Project's dataset of 891 dichotomous traits for 4635 communities. Using these multivariate statistical techniques, we have investigated the correlates of Bride-Price and Dowry related traits, based on the information for 1222 South Indian communities (a subset of the POI dataset). It is seen that, as one moves upwards from communities in the lower social/economic level, the system of bride price alone is first replaced by bride price and dowry, and subsequently, by dowry alone.

Though 'Bride-wealth' may be a more appropriate term, we have used the term 'Bride-price' in this report, so as to maintain consistency with the nomenclature adopted in list of traits used in the POI questionnnaire.

Methodology

To identify the traits significantly associated with, for example, bride price, in the 1222 communities of southern India, a list of traits shown by 20 or more communities was first prepared. From this list, a trait was judged as significantly associated if
(i) in the set of communities reporting this trait, the percentage of those reporting bride price was at least 5% more (or 5% less) than the percentage reporting bride price in the entire set, and
(ii) this differnce of 5% was statistically significant at $p<0.05$, using both Z and chi-square tests, with Bonferroni criterion for multiple comparisons being employed.

The set of traits selected by the above criteria was the subjected to cluster analysis (single linkage as well as complete linkage algorithms were used). A graphical representation of the traits as points in two dimensional space was also attempted using multidimensional scaling. More details of the methodology have been described in section 1 of this report.

Results

Of the 1222 communities, 253 reported practising only bride-price (BP), 594 only dowry (DW), 214 both bride-price and dowry (BD) and the remaining 161 neither bride-price nor dowry (NN). The 1222 communities reported a total of 441 traits which are found in 20 or more communities. By the criteria described in the methodology, 79 traits were significantly associated with BP (42 positive, 37 negative), 23 with DW (14 positive, 9 negative), 14 with BD (12 positive, 2 negative) and 28 with NN (18 positive and 10 negative). These traits have been

listed in tables I to IV respectively, along with the other details (values of chi-square etc).

Strong positive association with BP was seen for traits characteristic of tribal communities (hunting and gathering, shifting cultivation), and with DW was seen for communities of Bramhan varna (vegeterianism, high self-perception). The NN communities were mostly the Muslims while BD was associated with (curiously) using tobacco in the form of gutka, using cow-dung cakes for fuel and male tattooing.

Single linkage clustering of traits associated with BP (positively or negatively) produced five distinct groups : (i) the urban educated class (ii) bramhins , both preferring DW, (iii) Islamic communities , belonging to NN, (iv) Scheduled tribes , preferring BP and (v) Rural, socially and economically less advanced communities, typifying BD.

Discussion

The clustering of traits strikingly parallels the one obtained during our earlier analysis of the correlates of desired family size (DFS) [section 1 of this report], though, interestingly, preference for low or high family size did not emerge as a correlate of BP or DW. Since the composite economic index (CEI) devised by us in the earlier analysis had proved useful in analysing the patterns of DFS, we have also examined the relationship between CEI and BP/DW/BD/NN. When the cumulative proportion of communities in each of these groups is plotted against CEI (Fig. 1), the preponderence of BP at low CEI and that of DW at high CEI is clearly seen, with the BD and NN (nearly overlapping lines) falling in between.

A similar pattern observed during DFS analysis led to the description of the perception of children as producer vs consumer goods. Low CEI communites prefer more children since the latter act as producer goods, by adding to economic earning capacity. A similar argument viz. perception of a wife as consumer/producer goods seems self-evident. However, since other customs (e.g., rules of inheritance) are also likely to have a strong though somewhat indirect influence, more analysis and exploration is clearly needed before a comprehensive interpretation of the patterns of bride-price/dowry system is attempted.

Legends to Tables

Tables I to IV list the traits which are strongly associated (positively or negatively) with only bride-price, only dowry, both or neither, respectively. The columns are organized as follows :

Column 1 - Serial number

Column 2 - Name of the trait

Column 3 - Number of communities (out of 1222) reporting that trait

Column 4 - Number of communities which report that trait and and also the trait corresponding to the table. Thus, for example, in table I, serial no. 5, out of the 156 communities who are vegeterians, only 12 report "only bride-price".

Column 5 - Proportion of the communities reporting that trait which also report the trait corresponding to the table. Thus, for table I, serial no. 5, the proportion 12/156 is shown as 0.0769.

Column 6 - The value of chi-square,
(expected-observed)^2/ (expected)
where expected corresponds to the proportion if there was no correlation between the reported trait and the trait corresponding to the table. Thus, since 253 out of 1222 communities report only bride price, if there was no correlation between vegeterianism and bride-price, then of the 156 communities reporting vegeterianism,
(156 X 253)/1222=32.30 are expected to report bride-price.

Legends to Figures

Fig. 1 - Cumulative proportion of communities reporting exclusive bride-price (upper curve), exclusive dowry (lower curve), both and neither (the two middle curves) as a function of the composite economic index CEI. The CEI is based on 18 traits associated with high and 9 with low socioeconomic status. Using equal weights of +1 and -1 for these traits, the CEI ranges from -9 to +18.

TABLE I. CORRELATES OF THE TRAIT "ONLY BRIDE-PRICE"

1	ONLY DOWRY PAID	594	0	0.0000	-227.00
2	DOWRY(CASH AND KIND)	567	91	0.1605	-72.90
3	SCHOLARS ARE FOUND IN THE COMMUNITY	437	86	0.1968	-39.29
4	GIRLS STUDY UPTO COLLEGE LEVEL	384	71	0.1849	-39.10
5	VEGETARIAN COMMUNITY	156	12	0.0769	-38.03
6	WATCH TELEVISION	560	130	0.2321	-32.98
7	OTHER'S PERCEPTION OF THE COMMUNITY IS HIGH	147	14	0.0952	-31.67
8	ADMINISTRATORS ARE FOUND IN THE COMMUNITY	493	112	0.2272	-30.99
9	ENGINEERS/DOCTORS ARE FOUND IN THE COMMUNITY	630	155	0.2460	-30.55
10	BOYS STUDY UPTO POST-GRADUATE LEVEL	305	58	0.1902	-29.42
11	FULLY USE MODERN MEDICARE	499	119	0.2385	-26.96
12	FORMAL EDUCATION IS FAVOURABLE FOR GIRLS	741	196	0.2645	-26.84
13	THREAD-WEARING CEREMONY OBSERVED	235	42	0.1787	-25.45
14	SELF-PERCEPTION OF THE COMMUNITY IS HIGH	249	46	0.1847	-25.39
15	BRAHMAN VARNA	98	7	0.0714	-24.76
16	GIRLS STUDY UPTO POST-GRADUATE LEVEL	154	21	0.1364	-24.35
17	SAVINGS FAVOURED	787	216	0.2745	-23.89
18	ISLAM (EXCLUSIVE)	78	4	0.0513	-22.35
19	DISPOSAL OF BONES IN WATER	496	126	0.2540	-21.31
20	INDUSTRY(CONTINUING)	116	14	0.1207	-20.75
21	BOYS STUDY UPTO COLLEGE LEVEL	652	178	0.2730	-20.33
22	CIRCUMCISION CEREMONY FOR BOYS CONDUCTED	81	6	0.0741	-20.12
23	WOMEN DO ONLY HOUSEHOLD WORK	173	30	0.1734	-19.73
24	PART RURAL PART URBAN COMMUNITY	415	104	0.2506	-18.79
25	MEHAR:PROMISED FOR FUTURE	49	0	0.0000	-18.73
26	CREATIVE ARTISTS ARE FOUND IN THE COMMUNITY	239	50	0.2092	-18.71
27	MARRIAGE WITH FATHER'S BROTHER'S DAUGHTER	72	5	0.0694	-18.42
28	INDUSTRY (NEWLY ACQUIRED)	108	14	0.1296	-18.02
29	MARRIAGE WITH MOTHER'S SISTER'S DAUGHTER	74	6	0.0811	-17.55
30	SACRED SPECIALISTS FOR RELIGIOUS TEACHING	284	65	0.2289	-17.46
31	AQIQA CEREMONY OBSERVED	64	4	0.0625	-17.11
32	PARALLEL COUSIN MARRIAGES ALLOWED	80	8	0.1000	-16.67
33	TEACHERS ARE FOUND IN THE COMMUNITY	881	262	0.2974	-16.57
34	FORMAL EDUCATION IS FAVOURABLE FOR BOYS	932	280	0.3004	-16.29
35	KANYADAN EXISTS	355	90	0.2535	-15.37
36	FUEL RESOURCE:KEROSENE	861	258	0.2997	-15.34
37	URBAN COMMUNITY	84	10	0.1190	-15.22
38	TRADITIONAL COUNCILS CAN IMPOSE SOCIAL BOYCOTT	373	190	0.5094	15.80
39	ART AND CRAFT : BODY TATTOOING	35	28	0.8000	15.99
40	ART AND CRAFT : BASKETRY	94	60	0.6383	16.14
41	HUNTING AND GATHERING(CONTINUING)	40	31	0.7750	16.15
42	SHIFTING CULTIVATION(TRADITIONAL)	40	31	0.7750	16.15
43	JOWAR	278	148	0.5324	16.41
44	DEPENDENT ON MONEYLENDERS	623	301	0.4831	16.63
45	TATTOOING (MALE)	43	33	0.7674	16.70
46	SHIFTING CULTIVATION(CONTINUING)	20	19	0.9500	16.87
47	TRADITIONAL COUNCILS CAN IMPOSE SOCIAL BOYCOTT, PHYSICAL PUNISHMENT AND FINE	70	48	0.6857	16.88

48	PREFER INDIGENOUS FAMILY WELFARE METHOD	48	36	0.7500	16.99
49	MARRIAGE FEAST BY GROOM'S PARENTS	277	149	0.5379	17.58
50	LABOUR(CONTINUING)	834	396	0.4748	18.74
51	BEGGING	55	41	0.7455	18.99
52	USE TOBACCO (KHAINI, GUTKA ETC.)	516	259	0.5019	19.37
53	RURAL COMMUNITY	698	339	0.4857	19.57
54	MODERATELY USE MODERN MEDICARE	517	260	0.5029	19.72
55	CHILD LABOUR EXISTS	637	313	0.4914	19.88
56	FORMAL EDUCATION IS PARTLY FAVOURABLE : GIRLS	376	199	0.5293	21.29
57	DIVORCE WITH SOCIAL APPROVAL	616	309	0.5016	23.00
58	WOMEN HAVE ROLE IN COLLECTION OF FUEL	867	419	0.4833	23.20
59	SACRED SPECIALISTS FOR EXORCISM	136	87	0.6397	23.60
60	PASTORAL NOMADIC COMMUNITY	75	55	0.7333	24.20
61	TRAPPING BIRDS & ANIMALS(TRADITIONAL)	76	56	0.7368	25.02
62	SELF-PERCEPTION OF THE COMMUNITY IS LOW	402	217	0.5398	26.14
63	TRADITIONAL COUNCILS CAN IMPOSE CASH FINES	518	270	0.5212	26.22
64	PORK INCLUDING WILD BOAR CONSUMED	476	252	0.5294	27.01
65	WOMEN TAKE ALCOHOLIC DRINKS OCCASIONALLY	251	148	0.5896	28.27
66	BOTH MEN AND WOMEN DANCE	197	122	0.6193	28.99
67	OTHER'S PERCEPTION OF THE COMMUNITY IS LOW	543	288	0.5304	31.22
68	HUNTING AND GATHERING(TRADITIONAL)	111	79	0.7117	31.54
69	EXOGAMY : CLAN	414	229	0.5531	31.67
70	SCHEDULED TRIBES	108	78	0.7222	32.68
71	FORMAL EDUCATION IS PARTLY FAVOURABLE : BOYS	243	150	0.6173	35.15
72	MEN TAKE ALCOHOLIC DRINKS REGULARLY	253	157	0.6206	37.62
73	WOMEN TAKE ALCOHOLIC DRINKS	281	172	0.6121	38.88
74	MARRIAGE BY ELOPEMENT	121	92	0.7603	45.28
75	TRADITIONAL CASTE COUNCIL EXISTS	612	343	0.5605	50.91
76	BRIDE-PRICE(CASH AND KIND)	157	157	1.0000	156.82
77	BRIDE-PRICE AND DOWRY	214	214	1.0000	213.76
78	BRIDE-PRICE(CASH)	221	221	1.0000	220.75
79	ONLY BRIDE PRICE PAID	253	253	1.0000	252.71

TABLE II. CORRELATES OF THE TRAIT "ONLY DOWRY"

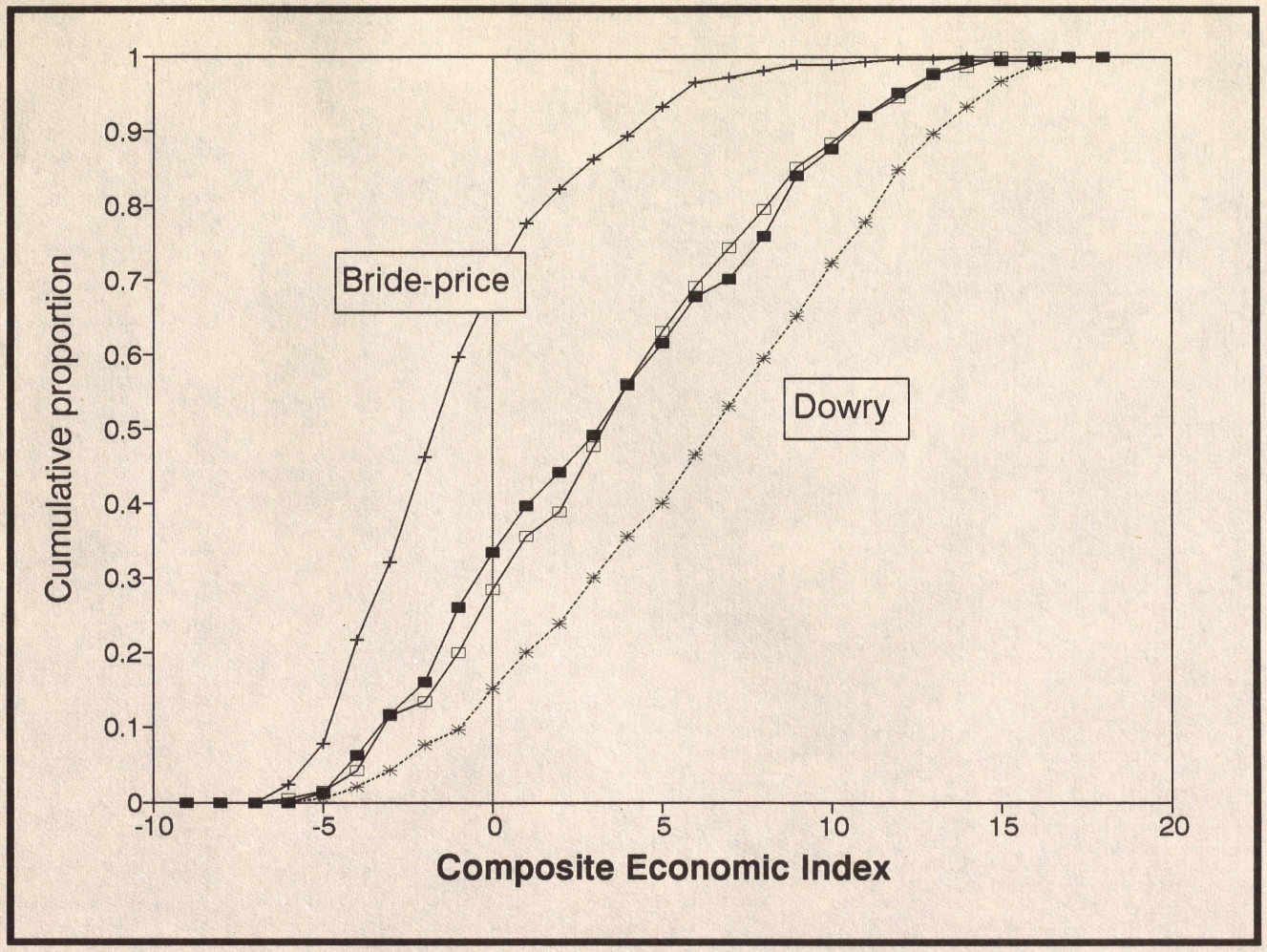
1	ONLY BRIDE PRICE PAID	253	0	0.0000	-167.29
2	BRIDE-PRICE(CASH AND KIND)	157	49	0.3121	-28.94
3	BRIDE-PRICE(CASH)	221	88	0.3982	-23.12
4	SCHEDULED TRIBES	108	32	0.2963	-21.75
5	SELF-PERCEPTION OF THE COMMUNITY IS LOW	402	194	0.4826	-19.40
6	PASTORAL NOMADIC COMMUNITY	75	20	0.2667	-17.66
7	FORMAL EDUCATION IS PARTLY FAVOURABLE : BOYS	243	109	0.4486	-16.62
8	WOMEN TAKE ALCOHOLIC DRINKS	281	132	0.4698	-15.58
9	OTHER'S PERCEPTION OF THE COMMUNITY IS LOW	543	285	0.5249	-15.27
10	WATCH TELEVISION	560	445	0.7946	15.08
11	DOWRY IN CASH	89	89	1.0000	15.45
12	GIRLS STUDY UPTO POST-GRADUATE LEVEL	154	142	0.9221	15.85
13	GIRLS STUDY UPTO COLLEGE LEVEL	384	320	0.8333	17.21
14	IRRIGATION THROUGH CANALS	317	270	0.8517	17.40
15	ENTREPRENEURS/BUSINESSMEN FOUND IN THE COMM.	719	568	0.7900	18.03
16	BOYS STUDY UPTO POST-GRADUATE LEVEL	305	263	0.8623	18.65
17	KANYADAN EXISTS	355	301	0.8479	18.71
18	ADMINISTRATORS ARE FOUND IN THE COMMUNITY	493	406	0.8235	19.64
19	ENGINEERS/DOCTORS ARE FOUND IN THE COMMUNITY	630	511	0.8111	21.41
20	SCHOLARS ARE FOUND IN THE COMMUNITY	437	372	0.8513	23.87
21	BRIDE-PRICE AND DOWRY	214	214	1.0000	37.15
22	DOWRY(CASH AND KIND)	567	567	1.0000	98.42
23	ONLY DOWRY PAID	594	594	1.0000	103.11

TABLE III. CORRELATES OF THE TRAIT "BOTH BRIDE-PRICE AND DOWRY"

1	ONLY DOWRY PAID	594	0	0.0000	-104.02
2	ONLY BRIDE PRICE PAID	253	0	0.0000	-44.31
3	UNCLE-NIECE MARRIAGE ALLOWED	731	172	0.2353	15.11
4	DISSEMINATION OF INFORMATION THROUGH VOLUNTART AGENCIES	377	98	0.2599	15.49
5	BRIDE-PRICE(CASH AND KIND)	157	49	0.3121	16.82
6	IRRIGATION THROUGH LAKES	136	44	0.3235	17.10
7	TATTOOING (MALE)	43	19	0.4419	17.47
8	POLYGYNY:SORORAL	195	59	0.3026	18.08
9	USE TOBACCO (KHAINI, GUTKA ETC.)	516	131	0.2539	18.27
10	DOWRY IN KIND	78	30	0.3846	19.55
11	FUEL RESOURCE:COWDUNG CAKE	502	131	0.2610	21.12
12	TRADITIONAL COUNCILS CAN IMPOSE SOCIAL BOYCOTT, PHYSICAL PUNISHMENT AND FINES	70	30	0.4286	25.68
13	BRIDE-PRICE(CASH)	221	88	0.3982	62.79
14	BRIDE-PRICE AND DOWRY	214	214	1.0000	831.48

TABLE IV. CORRELATES OF THE TRAIT "NEITHER BRIDE-PRICE, NOR DOWRY"

1	ONLY DOWRY PAID	594	0	0.0000	-78.26
2	DOWRY(CASH AND KIND)	567	0	0.0000	-74.70
3	ONLY BRIDE PRICE PAID	253	0	0.0000	-33.33
4	BRIDE-PRICE(CASH)	221	0	0.0000	-29.12
5	BRIDE-PRICE AND DOWRY	214	0	0.0000	-28.19
6	DRAVIDIAN: CENTRAL DRAVIDIAN GROUP	344	14	0.0407	-21.65
7	CLAN	692	47	0.0679	-21.40
8	BRIDE-PRICE(CASH AND KIND)	157	0	0.0000	-20.68
9	VERMILION AS SYMBOL OF WOMEN'S MARRIED STATUS	537	35	0.0652	-18.06
10	UNCLE-NIECE MARRIAGE ALLOWED	731	58	0.0793	-15.24
11	WHEAT	199	47	0.2362	16.47
12	COW BEEF CONSUMED	229	53	0.2314	17.27
13	WOMEN DO ONLY HOUSEHOLD WORK	173	43	0.2486	17.91
14	URBAN COMMUNITY	84	27	0.3214	22.94
15	FAMILY AFFILIATION TO PIR	53	21	0.3962	28.14
16	INDO-ARYAN	207	56	0.2705	30.26
17	DIVORCE WITH RELIGIOUS APPROVAL	59	24	0.4068	33.87
18	SILSILA AFFILIATED	24	16	0.6667	52.12
19	INDO-ARYAN: CENTRAL GROUP	106	41	0.3868	52.33
20	MEHAR PAID ON DEMAND	25	19	0.7600	74.89
21	MEHAR:INSTANTLY PAID	37	24	0.6486	75.03
22	MEHAR:PROMISED FOR FUTURE	49	32	0.6531	101.07
23	AQIQA CEREMONY OBSERVED	64	39	0.6094	110.81
24	PARALLEL COUSIN MARRIAGES ALLOWED	80	45	0.5625	112.66
25	MARRIAGE WITH MOTHER'S SISTER'S DAUGHTER	74	44	0.5946	120.32
26	CIRCUMCISION CEREMONY FOR BOYS CONDUCTED	81	47	0.5802	123.67
27	MARRIAGE WITH FATHER'S BROTHER'S DAUGHTER	72	44	0.6111	125.57
28	ISLAM (EXCLUSIVE)	78	48	0.6154	138.48


Cumulative proportion
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0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-10
-5
0
5
10
15
20
Composite Economic Index
Bride-price
Dowry

Dependence of People of India on Biological Resources

Introduction

The increased pace of urbanization and the increased rate of utilization of natural biological resources has put a considerable strain on the stocks of natural wealth - particularly forests and common lands - of India. While it is generally accepted that a substantial fraction of the Indian population depends on natural biological resources, quantitative estimates are difficult to obtain. To assess the magnitude of the problem , it is desirable to know the total size of the population likely to have been affected by these influences. In this report, we wish to estimate the proportion of Indian population dependent on the natural biological resources, using the data from the POI project.

The People of India Project of the Anthropological Survey of India has studied all the 4635 human communities of India, and has compiled some information on the use of natural biological resources by these communities. Of particular relevance are the 41 occupations included in this database. For each community, each of these occupations is recorded as being practiced traditionally, currently, both traditionally and currently or never. Of the 41 occupations, about 10 can be characterized as dependent on natural biological resources (hunting and gathering, fishing etc.). An analysis carried out on the basis of these 10 occupations indicated that about 20% of the communities are engaged in one or more of these occupations.

More important, however, is the data on the percentage of population involved in these activities. Using the data from the North Eastern States of India, where the population of different communities is also known, we have attempted to estimate the population percentages from community percentages. Regression analysis shows that this approach is moderately successful, the standard error of the estimates to be less than five percent.

Methodology

As explained in the introduction, each of the 41 major occupations listed in the POI data has been further described as being practiced by a community traditionally, currently or newly - the three being non-exclusive categories. Each of the 4635 communities has a 1/0 response for each of these 41 X 3 = 123 traits. Of the 41 traits, 10 have been identified as indicative of dependence on natural biological resources. For each community, based on the 30 corresponding traits, the number of traditional, continuing, newly acquired and abandoned occupations were obtained. Pooling these data led to the estimate of the number of communities in India dependent on

natural biological resources.

To extrapolate the community-level estimate to population-level figures, use was made of the data from the North Eastern States of India, where for each of the 891 traits, both the number of communities reporting the traits and the population figures for each of the communities were available. We have analysed the data for the North-East as a whole, as well as seperately for Arunachal Pradesh. Regression analysis was used to compute the proportion of population possessing a particular trait, as a function of the proportion of communities reporting it. Equations were obtained for the raw percentages as well as for arc-sine transformed and log-transformed data. The residuals from the regression line were analysed to estimate the magnitude of errors.

Results

The ten occupations associated with the use of natural biological resources are listed in table 1, along with the number of communities practicing them. Table 2 shows the frequency distribution of the communities - i.e. numbers practicing 1, 2, ... of these occupations. Overall, about 20% of the communities practice (and have been practicing) such occupations; about 8% have abandoned one or more such occupations while about 5% have newly acquired them.

The linear regression between percentage of communities showing specific traits and percentage of population showing them resulted in Pearson's correlation coefficients exceeding 0.95 for both the North East as a whole (738 traits, see Fig.1) as well as for Arunachal Pradesh (556 traits). Similar values were obtained when only the occupational traits were considered (about 70 data points). The slope of the regression line was 1.0, for raw percentages as well as for arcsine transformed or log transformed values. Figure 2 depicts the cumulative distribution of discrepancies. The standard errors of estimates were not very small (about 8%), and maximum value of residuals was over 30%. Discrepancies seen for traits related to dependence on natural biological resources were, however, smaller in magnitude.

Discussion

From the regression analysis, the standard error of estimate is seen to be about 8% for a single trait. This is expected to be reduced for figures obtained by pooling two or more traits. Approximately, the standard error should be inversely proportional to the square root of the number of traits pooled - and for 10 traits, this leads to a 95% confidence interval of 5%. Thus 15% to 25% of the Indian population can be said to be dependent on natural biological resources. It should be noted that these are underestimates, since only the occupations were included in this exercise. Clearly, if dependence on firewood for fuel, for example, is included in the list, the numbers are likely to go up.

A comparison of the percentage of communities abandoning and newly acquiring occupations dependent on natural biological resources is instructive. While the individual differences are too small to be statistically significant, it is clearly seen that subsistence-level dependence (hunting and gathering, shifting cultivation) is on the decline. On the other hand, occupations likely to be connected with the market economy (fishing, sericulture, basket making/mat weaving) are on the increase.

We are in the process of compiling data on the distribution and population of communities at the level of districts. It is hoped that this finer level information may give more reliable estimates as well as other insights into the use of natural biological resources by the people of India.

Table 1. Occupations which depend on availability of natural biological resources. Numbers and percentages (out of 4635) of communities practising these occupations is given below. The status of the occupation is categorized as abandoned, traditional, current and newly acquired.

Sl. No.	Occupation	Abandoned		Traditional		Current		Newly acquired	
		#	%	#	%	#	%	#	%
1	HUNTING AND GATHERING	194	4.19	420	9.06	237	5.11	11	0.24
2	FISHING	41	0.88	279	6.02	301	6.49	63	1.36
3	TRAPPING BIRDS & ANIMALS	94	2.03	196	4.23	110	2.37	8	0.17
4	SHIFTING CULTIVATION	92	1.98	253	5.46	171	3.69	10	0.22
5	SERICULTURE	2	0.04	5	0.11	54	1.17	51	1.10
6	BEE-KEEPING	6	0.13	16	0.35	47	1.01	37	0.80
7	SKIN AND HIDE WORK	34	0.73	134	2.89	114	2.46	14	0.30
8	IVORY, BONE AND HORN WORK	3	0.06	13	0.28	16	0.35	6	0.13
9	BASKET MAKING	64	1.38	297	6.41	306	6.60	73	1.57
10	MAT WEAVING	23	0.50	127	2.74	160	3.45	56	1.21

Table 2. Number and percentages of communities practising one or more occupations involving use of natural biological resources. The percentage is out of 4635 communities.

No. of Occupations	Status of the occupations							
	Abandoned		Traditional		Current		Newly Acquired	
	#	%	#	%	#	%	#	%
1	251	5.415	635	13.700	638	13.765	216	4.660
2	90	1.942	207	4.466	195	4.207	34	0.734
3	29	0.626	126	2.718	94	2.028	11	0.237
4	5	0.108	43	0.928	36	0.777	3	0.065
5	3	0.065	12	0.259	10	0.216	0	0.000
6	0	0.000	10	0.216	2	0.043	0	0.000
7	0	0.000	3	0.065	0	0.000	0	0.000
	378	8.155	1036	22.352	975	21.036	264	5.696

Fig.1. Regression of % pop vs % commu
Data for Northeastern India

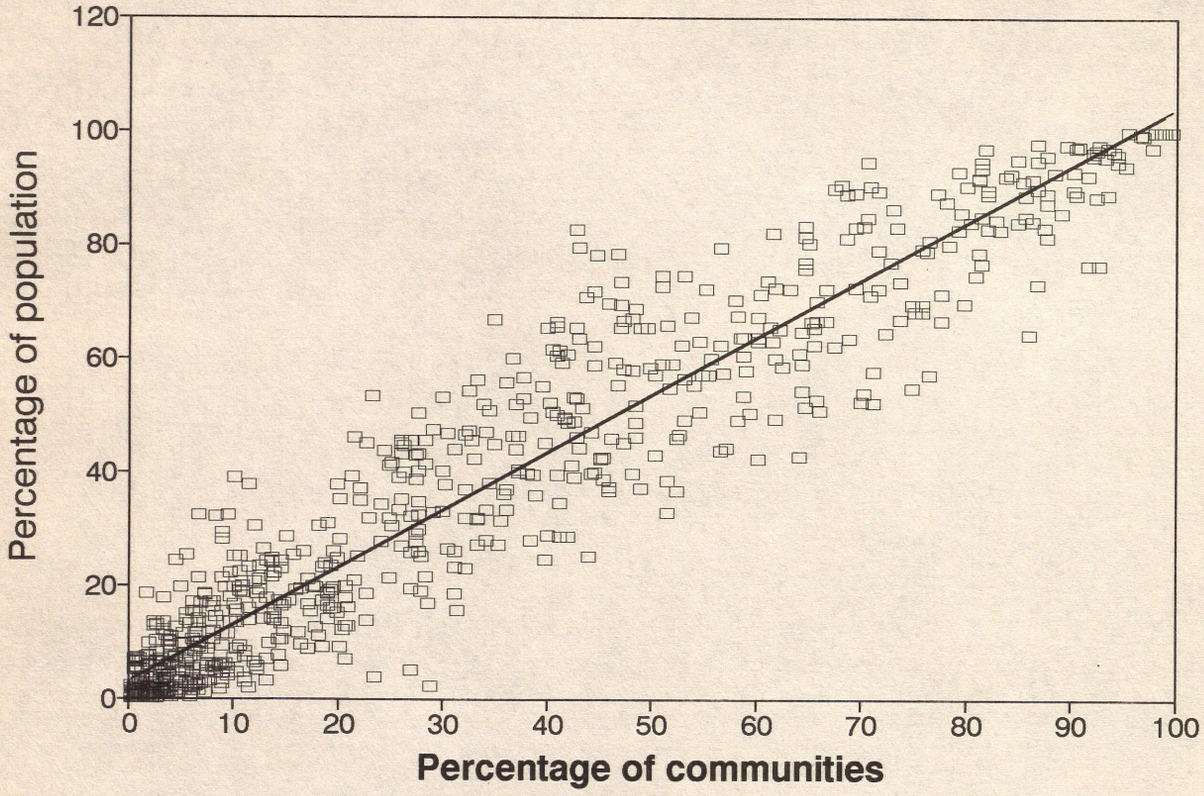
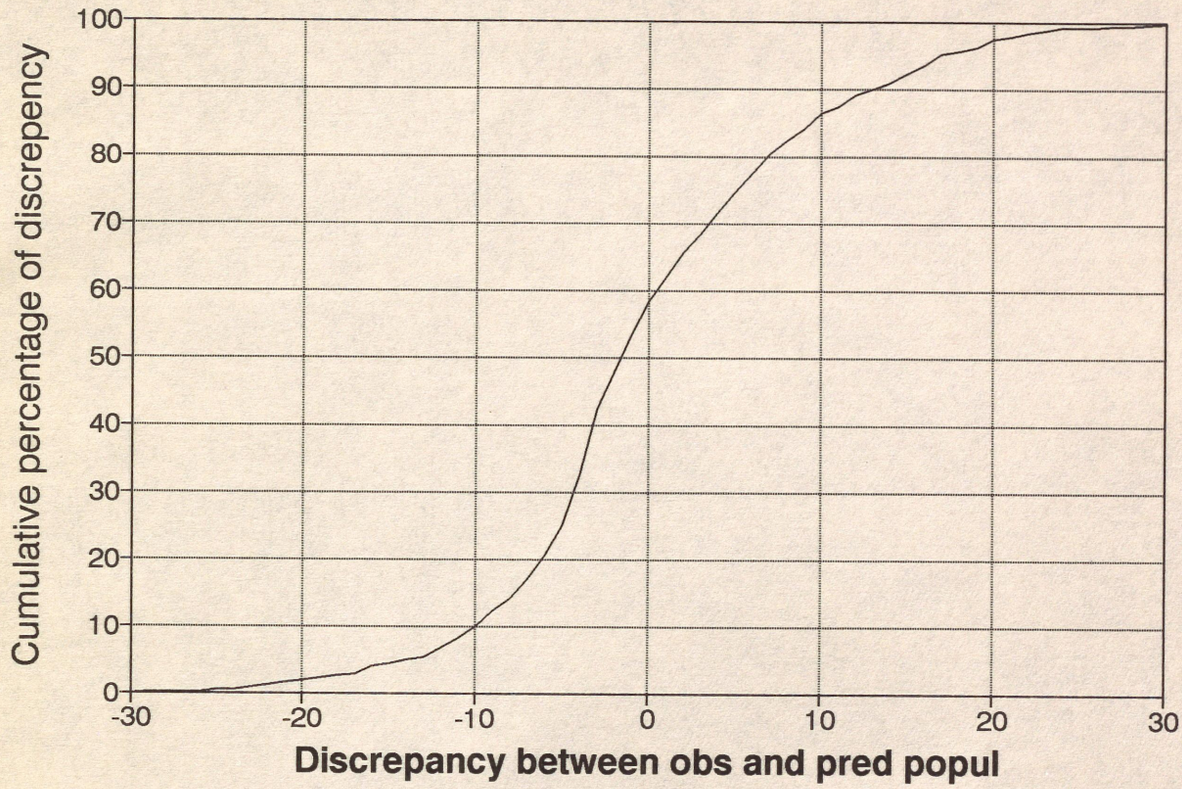


Fig.2 Analysis of residuals
Data from Northeastern India



CULTURAL DIVERSITY OF MEGHALYA
A Preliminary Analysis

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A Technical Report Prepared under the Long Term Collaborative Research Programme

"Multivariate Statistical Analysis of the Data Generated under People of India Project"

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PREAMBLE

Under the long-term collaborative project between An.S.I. and CES, IISc, Bangalore, to analyze the POI data, district-wise population figures for various communities studied under the project were collected. In case of SC & ST communities, district-wise population figures were available in the special tables of the 1981 census except for Assam where census could not be conducted in 1981. Here, for Assam population figures of 1971 census are used. For communities other than SC & ST, district-wise figures were available only in censuses of pre-Independence period. Most comprehensive of these earlier censuses was the one of 1931. Hence district-wise population figures were collected from the 1931 census. All this together formed a district-wise database of population figures for 1239 communities (see table 1).

Table 1 **Among 2753 unique communities:**

I	Population /distribution available only in 1981...	281
II	Population /distribution available only in 1931...	582
III	Population /distribution available both in 1981 and 1931	376

Population available	1239
Population not available	1514

To begin with, a simple analysis of North-eastern states was taken up. In case of Northeast, except for Assam, for the rest of the states such as Mizoram, Nagaland, Manipur and Tripura, district-wise population figures were available for most of the communities (as large number of these belong to scheduled tribe category). On the other hand, the People of India project gives yes/no response for 776 traits covering aspects like constitutional states, food habits, marriage practices, occupation, religion, language and so on. It is presumed that, for certain traits, they occur uniformly throughout the community (marriage practices, language, etc). Hence a `yes' response for marriage with one's mother brother's daughter (MBD) in a given community means this trait occurs (normatively) in so many number of people of that community. A computer programme added up the number of persons bearing a particular trait in a given state using community-wise population figures from census and yes/no response from POI database. The total population of each state was available separately. This was checked against the added up community-wise population figures. Discrepancy did occur as not all the communities in a given state were covered in the POI project. However, the magnitude of discrepancy was generally small. Percentage of number of persons bearing a particular trait were calculated using the total population of a given state.

In this report we present a more detailed analysis for the state of Meghalaya. Analysis for other states would be taken up subsequently. We hope to circulate copies of this draft report among the experts. The format of the report would be revised and modified in the light of their comments.

INTRODUCTION

The state of Meghalaya has a total geographical area of 22.5 thousand square kilometers. It has five administrative districts, namely, West Garo Hills, East Garo Hills, West Khasi Hills, East Khasi Hills and Jaintia Hills. Meghalaya is sparsely populated due to its rugged terrain and inhospitable environment. In 1981 census, it had about 1.33 million population with as low density as 59 per sq.km.

Altogether 24 communities have been studied in Meghalaya. The following table gives the number communities distributed in different districts and their total population in the respective district.

District	No. of communities	Total population
East Garo Hills	12	156786
East Khasi Hills	18	420456
Jaintia Hills	13	169125
West Garo Hills	13	308271
West Khasi Hills	16	203640

In western Meghalaya, the most important and numerically dominant group is the Garo. Besides the Garo, there are other communities who inhabit the area namely, the Rabha, Hajong, Koch, Man, Dalu and Banai. Amongst them the Man is a small tribe considered to be of the Burmese origin and Buddhist by religion. The Banai and the Dalu are two least known communities of the Meghalaya. The eastern Meghalaya is the domain of the Khasis and the Jaintias. The broad term Khasi includes the Bhoi, War, Khynriam and Lyngam. The Bhoi inhabit the north-western part of the Khasi Hills, the War inhabit the southern part of the east

Khasi Hills, the Khynriam occupy the central and highest peaks of the Meghalaya plateau, and the Lyngam inhabit the western border of the east Khasi Hills near the Garo Hills. All these groups of the Khasi share basically the same language and the social structure but each group tends to be endogamous.

The important immigrant communities of this region are the Bangalese, the Muslim, the Nepali, the Bihari, the Marwari and the Mazhabi Sikhs. They came to this area in search of the livelihood. In Shillong and its surrounding area, a large number of these immigrant communities are found. The Garo Hill and the Jaintia Hill districts attracted non-tribal communities, particularly the Bengalese because of trade which existed long before the advent of the British.

METHODOLOGY

Compilation of data on distribution of communities in various districts was one of the items in the schedule guideline of the People of India Project. While studying a community, the investigators collected this information from the informants. The census of India has published district-wise population figures for SC & ST communities. This information was collected and equated to the communities studied under People of India project. Further, district-wise population figures were collected from 1931 census and were also linked to the People of India communities. With this, a fairly reasonable database on district-wise distribution of communities and their population was built. The following table gives district-wise population of studied and un-studied communities in Meghalaya. In this the communities which have the code '13' are studied in the state under POI.

DISTRICT-WISE POPULATION OF COMMUNITIES IN MEGHALAYA

District	Code	Community	Population in the district	% of state population	Total population
East Garo Hills	13	Bangali**	4050	20.00	20250
	13	Bihari**	4050	20.00	20250
	13	Garo	124163	30.62	405445
	13	Gurkha /Gorkha /Nepali	1790	7.44	24045
	13	Hajong	172	0.71	24317
	13	Khasi,	80	0.01	628758
	13	Khasi: Muslim**	4050	50.00	8100
	13	Koch**	4050	50.00	8100
	13	Man	2	0.30	666
	13	Marwari**	4050	20.00	20250
	13	Muslim /Musalman**	4050	20.00	20250
	13	Rabha	6279	50.00	12558
		Taken for analysis	156786		
	20	Bansphor /Bansphodia	13	6.13	212
	20	Bhuimali /Bhuinmali	17	8.33	204
	30	Chakma	16	15.53	103
	2	Chamar, Mochi, Muchia,	20	1.66	1203
	20	Dhoba /Dhobi	12	3.82	314
	22	Gurung	36	1.69	2126
	2	Hari /Brittiala Bania,	7	6.14	114
	2	Hira	1	2.08	48
	20	Jalia, Kaibarta	7	3.66	191
	2	Jhalo Malo	5	0.48	1052
	2	Kachari, Dimasa	15	1.11	1354
	14	Kuki	17	0.56	3050
	22	Limbu	57	14.96	381
	21	Magar	48	1.16	4139
	30	Mizo, Hmar	1	0.08	1278
	30	Mizo, Lushai	2	0.30	669
	30	Mizo, Mara /Lakher	1	0.14	708
	14	Naga, Angami	1	0.34	291
	20	Namasudra	6	0.54	1111
	22	Rai	87	18.79	463
	20	Sutradhar	25	9.19	272
	18	Thakuri	32	3.66	874
		Not taken for analysis	426		
		Total	157212		
East Khasi Hills	13	Bangali	4050	20.00	20250
	13	Bihari	4050	20.00	20250
	13	Garo	14274	3.52	405445
	13	Gurkha /Gorkha /Nepali	8852	36.81	24045
	13	Hajong	1253	5.15	24317
	13	Karbi /Mikir	6984	85.91	8129
	13	Khasi,	346535	55.11	628758
	13	Khasi, Bhoi**	4050	50.00	8100
	13	Khasi, Khynriam**	4050	50.00	8100
	13	Khasi, War**	4050	50.00	8100
	13	Khasi: Muslim**	4050	50.00	8100
	13	Lalung	1410	36.58	3855

	13	Man	13	1.95	666
	13	Marwari**	4050	20.00	20250
	13	Marwari (Muslim)**	4050	100.00	4050
	13	Mizo, Biate	635	96.95	655
	13	Muslim /Musalman**	4050	20.00	20250
	13	Sikh**	4050	100.00	4050
		Taken for analysis	420456		
	20	Bansphor /Bansphodia	41	19.34	212
	20	Bhuimali /Bhuinmali	80	39.22	204
	30	Chakma	34	33.01	103
	2	Chamar, Mochi, Muchia,	143	11.89	1203
	20	Dhoba /Dhobi	234	74.52	314
	17	Dholi	10	45.45	22
	22	Gurung	804	37.82	2126
	2	Hari /Brittiala Bania,	92	80.70	114
	2	Hira	21	43.75	48
	20	Jalia, Kaibarta	44	23.04	191
	2	Jalkeot	7	87.50	8
	2	Jhalo Malo	18	1.71	1052
	2	Kachari, Dimasa	1181	87.22	1354
	14	Kuki	271	8.89	3050
	22	Lalbegi	30	100.00	30
	22	Limbu	117	30.71	381
	21	Magar	1596	38.56	4139
	3	Mehtar (Malkanamehtar)**	4050	50.00	8100
	30	Mizo, Hmar	760	59.47	1278
	30	Mizo, Lushai	635	94.92	669
	30	Mizo, Mara /Lakher	665	93.93	708
	30	Mizo, Pawi	672	100.00	672
	14	Naga, Angami	282	96.91	291
	14	Naga, Kabui	282	98.60	286
	14	Naga, Sema	282	97.92	288
	20	Namasudra	91	8.19	1111
	20	Patni	43	79.63	54
	30	Pnar	23	0.06	39965
	22	Rai	138	29.81	463
	20	Sutradhar	1	0.37	272
	18	Thakuri	322	36.84	874
	12	Vaiphei	6	33.33	18
		Not taken for analysis	12975		
		Total	433431		
Jaintia Hills	13	Bangali	4050	20.00	20250
	13	Bihari	4050	20.00	20250
	13	Garo	205	0.05	405445
	13	Gurkha /Gorkha /Nepali	2761	11.48	24045
	13	Hajong	16	0.07	24317
	13	Jaintia**	4050	100.00	4050
	13	Karbi /Mikir	1144	14.07	8129
	13	Khasi,	143692	22.85	628758
	13	Lalung	1035	26.85	3855
	13	Man	5	0.75	666
	13	Marwari	4050	20.00	20250
	13	Mizo, Biate	17	2.60	655
	13	Muslim /Musalman	4050	20.00	20250
		Taken for analysis	169125		

	30	Chakma	23	22.33	103
	2	Chamar, Mochi, Muchia,	18	1.50	1203
	20	Dhoba /Dhobi	1	0.32	314
	22	Gurung	446	20.98	2126
	2	Hari /Brittiala Bania, Bania	4	3.51	114
	2	Jhalo Malo	1	0.10	1052
	2	Kachari, Dimasa	19	1.40	1354
	14	Kuki	2718	89.11	3050
	22	Limbu	33	8.66	381
	21	Magar	851	20.56	4139
	30	Mizo, Hmar	497	38.89	1278
	30	Mizo, Lushai	17	2.54	669
	30	Mizo, Mara /Lakher	23	3.25	708
	14	Naga, Kabui	2	0.70	286
	20	Namasudra	21	1.89	1111
	20	Patni	1	1.85	54
	30	Pnar	19357	48.43	39965
	22	Rai	13	2.81	463
	18	Thakuri	166	18.99	874
	12	Vaiphei	6	33.33	18
		Not taken for analysis	24217		
		Total	193342		
West Garo Hills	13	Banai	4050	50.00	8100
	13	Bangali	4050	20.00	20250
	13	Bihari	4050	20.00	20250
	13	Dalu**	4050	100.00	4050
	13	Garo	249145	61.45	405445
	13	Gurkha /Gorkha /Nepali	1790	7.44	24045
	13	Hajong	21922	90.15	24317
	13	Khasi,	139	0.02	628758
	13	Koch	4050	50.00	8100
	13	Man	646	97.00	666
	13	Marwari	4050	20.00	20250
	13	Muslim /Musalman	4050	20.00	20250
	13	Rabha	6279	50.00	12558
		Taken for analysis	308271		
	20	Bansphor /Bansphodia	158	74.53	212
	20	Bhuimali /Bhuinmali	107	52.45	204
	30	Chakma	13	12.62	103
	2	Chamar, Mochi, Muchia,	1022	84.95	1203
	20	Dhoba /Dhobi	67	21.34	314
	17	Dholi	12	54.55	22
	22	Gurung	36	1.69	2126
	2	Hari /Brittiala Bania,	11	9.65	114
	2	Hira	26	54.17	48
	20	Jalia, Kaibarta	140	73.30	191
	2	Jalkeot	1	12.50	8
	2	Jhalo Malo	1028	97.72	1052
	2	Kachari, Dimasa	114	8.42	1354
	14	Kuki	42	1.38	3050
	22	Limbu	57	14.96	381
	21	Magar	48	1.16	4139
	3	Mehtar (Malkanamehtar)	4050	50.00	8100
	30	Mizo, Hmar	16	1.25	1278
	30	Mizo, Lushai	12	1.79	669
	30	Mizo, Mara /Lakher	15	2.12	708

	14	Naga, Angami	1	0.34	291
	20	Namasudra	993	89.38	1111
	20	Patni	10	18.52	54
	30	Pnar	1	0.00	39965
	22	Rai	87	18.79	463
	20	Sutradhar	246	90.44	272
	18	Thakuri	32	3.66	874
		Not taken for analysis	8345		
		Total	316616		
West Khasi Hills	13	Banai	4050	50.00	8100
	13	Bangali	4050	20.00	20250
	13	Bihari	4050	20.00	20250
	13	Garo	17658	4.36	405445
	13	Gurkha /Gorkha /Nepali	8852	36.81	24045
	13	Hajong	954	3.92	24317
	13	Karbi /Mikir	1	0.01	8129
	13	Khasi,	138312	22.00	628758
	13	Khasi, Bhoi	4050	50.00	8100
	13	Khasi, Khynriam	4050	50.00	8100
	13	Khasi, Lyngam	4050	100.00	4050
	13	Khasi, War	4050	50.00	8100
	13	Lalung	1410	36.58	3855
	13	Marwari	4050	20.00	20250
	13	Mizo, Biate	3	0.46	655
	13	Muslim /Musalman	4050	20.00	20250
		Taken for analysis	203640		
	30	Chakma	17	16.50	103
	22	Gurung	804	37.82	2126
	2	Kachari, Dimasa	25	1.85	1354
	14	Kuki	2	0.07	3050
	22	Limbu	117	30.71	381
	21	Magar	1596	38.56	4139
	30	Mizo, Hmar	4	0.31	1278
	30	Mizo, Lushai	3	0.45	669
	30	Mizo, Mara /Lakher	4	0.56	708
	14	Naga, Angami	7	2.41	291
	14	Naga, Kabui	2	0.70	286
	14	Naga, Sema	6	2.08	288
	30	Pnar	20584	51.51	39965
	22	Rai	138	29.81	463
	18	Thakuri	322	36.84	874
	12	Vaiphei	6	33.33	18
		Not taken for analysis	23637		
		Total	227277		
		Total of Meghalaya	1327878		
		Total taken for analysis	1258278	(94.5%)	
		Total not taken for analysis*	69600	(5.5%)	

* This population could not be taken for analysis since there were no computer formats for these communities in Meghalaya and assigning those from neighbouring states was not promising

** Estimate by equally dividing unaccounted population

The People of India project gives information on 776 traits for 4635 communities covering the entire country. In Meghalaya, out of 24 communities studied under the project, fourteen belong to the scheduled tribe category and district-wise population for these was available easily. However, there are also 10 groups for which figures are not available. In two cases, population figures have been returned under the entries 'Naga' and 'Mizo'. Under People of India project these two populations have been studied at the endogamous group level such as "Naga Konyak", "Mizo Mara", etc. The population returned under the broad term 'Naga" and "Mizo" were redistributed in the following manner. Under the 'Naga' in East Khasi Hills district 3216 persons have been returned. In the same district, five Naga endogamous groups have also been returned in the same census with different populations. The population figure of 3216 is divided into five parts proportionately to the size of each Naga group and then added to the respective group. Similarly, population under the generic term 'Mizo' is also divided proportionately to the size of Mizo endogamous groups in that district and then added to the respective group. If other groups of the main group existed in a given district, these would have been reflected in the census, atleast in small numbers. Hence, proportionately dividing and adding population of the main group to subgroups returned in that district appears fairly reasonable.

The next step is to add up the population figures of all communities in a given district. This figure is tallied with the total population of the state under analysis. In case of Meghalaya, the total population as per distribution of communities is 1108428 while the total population of the state as per census is 1327878. Here it is reasoned that this population belongs to the

communities reported to be existing in the state but their population figures are not available from any source. In case of Meghalaya 15 such communities are reported to exist as per POI project. A population of 149850 could be assigned to these 15 communities thus arriving at total analysed population of 1258278. This population was divided equally among these communities. Some precision could be brought in this by using percentage of population in the state of such communities like Muslims, Christians, Buddhists. In the unaccounted population, proportionate percentage of population could first be set aside to such communities and then divided equally among the rest of the communities. Even among the remaining communities, their percentage in the total population of that zone could be used to divide the figures proportionately. In the present analysis these methods have not been used but it is intended to use them in the next stage. Following table gives district-wise account of analysed and un-analysed population.

District	Analysed	Not analysed	Total
East Garo Hills	156786 (99.7%)	426 (0.2%)	157212
East Khasi Hills	420456 (97.0%)	12975 (3.0%)	433431
Jaintia Hills	169125 (87.5%)	24217 (12.5%)	193342
West Garo Hills	308271 (97.4%)	8345 (2.6%)	316616
West Khasi Hills	203640 (89.6%)	23637 (10.4%)	227277
Total of Meghalaya	1258278 (94.5%)	69600 (5.5%)	1327878

Some 5.5 percent of the population could not be analysed as computer format data set could not be assigned to some of the communities not studied in Meghalaya.

Though 24 communities have been studied in Meghalaya, from reliable sources like census, we know for certain that there are some 20 additional groups in that state and district-wise population figures are available for many of them. It was a policy decision in the People of India project that if Naga groups are

studied extensively in Nagaland, they need not be studied in Meghalaya, even though census reports existence of such groups in Meghalaya. Without this decision, the number of communities in could have been more that 8000!. However, if sizable population existed in other states, they were definitely studied. Now the question is how to get data for these 20 additional groups in the form of 776 traits. One method could be that to borrow the data set from the nearest state. Thus for Naga endogamous groups whose population is reported in Meghalaya, the data set could be borrowed from Nagaland where these groups are studied. Similarly, for Mizo groups equation could be derived from Mizoram and so on. Clearly visible danger in this is that the traits on ecology many not be same, food habits might be different, occupations pursued may not same, development measures might be significantly different, and so on. However, conservative traits like language, marriage practices, religion, etc., may not alter the scene much. In case of Meghalaya, population from such cases accounted for only 5.5% of the state population. Since this was considerably low, these communities were not included in the analysis.

SALIENT FEATURES OF ANALYSIS:

The Eastern group of Austro Asiatic family of language is spoken by 53 percent of the people in Meghalaya (7 communities, 669258 persons, 53.19%). This branch of Austro Asiatic speakers are concentrated in East Khasi Hills (86%), Jaintia Hills (87%) and West Khasi Hills (75%). The Austro Asiatic speakers are conspicuously absent in East and West Garo Hill districts. The next important family of language spoken in Meghalaya is Bodo group of Tibeto-Burman family (442137 persons, 35.14%). This group of Tibeto

Burman speakers are concentrated in East Garo (85%) and West Garo (85%) Hill districts. There are also Indo Aryan speakers in Meghalaya who mainly constitute the immigrant communities. The Indo Aryan speakers constitute (125978 persons, 10.01%) and they are slightly higher in West Garo and West Khasi Hills compared other districts. Among these Indian Aryan speakers those who belong to Central group are around 3.9% while those who belong to Eastern group constitute 7.8%.

Out of 24 communities in Meghalaya 14 belong to scheduled tribe category and their total population is around 89% of the state population. The scheduled tribe population is highest in East Khasi Hills (92%) while it is around 80% in other districts.

A large segment of the society in Meghalaya have faith in Hinduism, Islam and Christianity (649008 persons, 51.58%), especially among the Khasis, one finds different sections following Hinduim, Christianity and Islam. The communities which profess Hinduism alone constitute 4.54% of the population (57125 persons). The percentage of those who profess Hinduism alone is higher in West Garo Hills district (5 communities, 40351 persons, 13.09%). There are around 2.57% of the population in Meghalaya (32400 persons) who profess Islam (exclusively) and their concentration is slightly higher in East Garo Hills (5.17%). Buddhists (0.05%) and Sikhs (0.32%) are reported from East Khasi Hills and West Garo Hills, respectively. Exclusively Christian population is concentrated in West Khasi Hills (0.3%). Nearly 33.22% of the population in Meghalaya (418055 persons) follow tribal religion but at the same time they also have faith in Christianity. The East Garo and West Garo Hills are highest in terms of (80%) concentration of those who follow Christianity as well as tribal religion.

The social structure in Meghalaya is characterized by clan

organization. More than 90% of the people subscribe to this kind of social organization and it is more or less same in all the districts. These clans are exogamous in nature. Most distinctive practice which one sees in Meghalaya is the custom of inheritance of property by the last born female child which is reported in more than eighty percent of the population in all the districts.

Meghalaya is characteristically distinct in terms of permitting cross cousin marriages. Among 12 communities total up 90% of the population (1126932, 89.56%) cross cousin and uncle niece marriages are permitted; such a practice normatively exists in large number of persons, though actual number of such marriages could be low. Preference is shown in case of marriage with mother's brother's daughter (90%) which is seen normatively among 82 to 95 percent of the population in all the districts of the state, while lesser preference is shown to marriage with father's sister's daughter (37%). Marriage with one's father's sister's daughter is considerably high in East Garo and West Garo Hill districts. This trait is seen much less in East Khasi, Jaintia and West Khasi Hills. In case of uncle niece marriage, there are 3 communities constituting 34.48% of the population (433795 persons) permitting this custom. Again the practice of uncle niece marriage is seen higher in East Garo (3 communities 84% of population) and West Garo (2 communities, 82% of the population) Hill Districts. This custom is seen in much lesser proportion in East Khasi and Jaintia Hills (5%, 2%, respectively). There are some communities (4) who permit marriage with one's mother's brother's daughter but not with any other cousins. This kind of practice is seen highest in East Khasi and Jaintia Hill Districts (85 to 86%). In four communities, marriage with parallel cousin is allowed. These communities follow Islam.

Meghalaya is distinct in terms of post marital residence: traditionally it is matrilocal, but considerable change has taken place and today neolocal residence is an equally important choice. In Khasi and Jaintia Hill districts, bilocal residence is almost of the same preferential order but this practice is conspicuously absent in Garo Hill districts.

Hunting and gathering is one of the important traditional occupations in Meghalaya. Nearly 34% of the population report this trait. The other important traditional economic pursuit is shifting cultivation. Eight communities in Meghalaya are involved in this type of cultivation and their total population comes to 84%. Shifting cultivation is proportionately same in all the districts ranging from 79 to 88% of the population. This does not mean that shifting cultivation is carried out by the shown number of people, but this could be seen as extent of spread of trait. Another important occupation is terrace cultivation which is seen from 79 to 88% in various districts. Most of the communities have taken to settled cultivation which is seen more than 90% in all the districts. Basket making, mat weaving and fishing during the leisure time are the occupations seen among most of the tribal communities in Meghalaya.

People in Meghalaya favour both indigenous and modern medicare. The family welfare programmes do not appear to be appealing, especially in Khasi and Jaintia Hill districts. However, more than 90% of the population in Garo Hill districts show a favourable attitude towards family welfare programmes.

DISTRICT-WISE ANALYSIS OF SELECTED TRAITS : MEGHALAYA

		State/district	Number of com munit-ies	%	Number of per sons bearing trait	% of total state popul ation
1			2	3	4	5
TYPES OF COMMUNITIES						
RURAL COMMUNITY						
All India: 2779	59.96%	Meghalaya	17	70.83	1141083	90.69
		East Garo Hills	6	50.00	134746	85.94
		East Khasi Hills	11	61.11	387304	92.12
		Jaintia Hills	8	61.54	150164	88.79
		West Garo Hills	8	61.54	290281	94.16
		West Khasi Hills	11	68.75	178588	87.70
URBAN COMMUNITY						
All India: 393	8.48%	Meghalaya	2	8.33	24300	1.93
		East Garo Hills	1	8.33	4050	2.58
		East Khasi Hills	2	11.11	8100	1.93
		Jaintia Hills	1	7.69	4050	2.39
		West Garo Hills	1	7.69	4050	1.31
		West Khasi Hills	1	6.25	4050	1.99
PART RURAL PART URBAN COMMUNITY						
All India: 1336	28.82%	Meghalaya	5	20.83	92895	7.38
		East Garo Hills	5	41.67	17990	11.47
		East Khasi Hills	5	27.78	25052	5.96
		Jaintia Hills	4	30.77	14911	8.82
		West Garo Hills	4	30.77	13940	4.52
		West Khasi Hills	4	25.00	21002	10.31
SCHEDULED TRIBES						
All India: 636	13.72%	Meghalaya	14	58.33	1116375	88.72
		East Garo Hills	5	41.67	128467	81.94
		East Khasi Hills	11	61.11	387304	92.12
		Jaintia Hills	8	61.54	150164	88.79
		West Garo Hills	5	38.46	275902	89.50
		West Khasi Hills	10	62.50	174538	85.71
LANGUAGE						
AUSTRO-ASIATIC: EASTERN GROUP						
All India: 12	0.26%	Meghalaya	7	29.17	669258	53.19
		East Garo Hills	2	16.67	4130	2.63
		East Khasi Hills	5	27.78	362735	86.27
		Jaintia Hills	2	15.38	147742	87.36
		West Garo Hills	1	7.69	139	0.05
		West Khasi Hills	5	31.25	154512	75.88
TIBETO-BURMAN: BODO GROUP						
All India: 36	0.78%	Meghalaya	6	25.00	442137	35.14
		East Garo Hills	3	25.00	134492	85.78
		East Khasi Hills	3	16.67	22668	5.39
		Jaintia Hills	3	23.08	2384	1.41
		West Garo Hills	4	30.77	263524	85.48
		West Khasi Hills	3	18.75	19069	9.36

INDO-ARYAN						
All India: 3012	64.98%	Meghalaya	9	37.50	125978	10.01
		East Garo Hills	6	50.00	14114	9.00
		East Khasi Hills	8	44.44	30368	7.22
		Jaintia Hills	6	46.15	14932	8.83
		West Garo Hills	7	53.85	40558	13.16
		West Khasi Hills	6	37.50	26006	12.77
INDO-ARYAN: CENTRAL GROUP						
All India: 1665	35.92%	Meghalaya	4	16.67	48600	3.86
		East Garo Hills	2	16.67	8100	5.17
		East Khasi Hills	4	22.22	16200	3.85
		Jaintia Hills	2	15.38	8100	4.79
		West Garo Hills	2	15.38	8100	2.63
		West Khasi Hills	2	12.50	8100	3.98
INDO-ARYAN: EASTERN GROUP						
All India: 766	16.53%	Meghalaya	6	25.00	97628	7.76
		East Garo Hills	5	41.67	10064	6.42
		East Khasi Hills	5	27.78	18218	4.33
		Jaintia Hills	5	38.46	10882	6.43
		West Garo Hills	6	46.15	36508	11.84
		West Khasi Hills	5	31.25	21956	10.78
UNCLASSIFIED CATEGORY						
All India: 6	0.13%	Meghalaya	1	4.17	20250	1.61
		East Garo Hills	1	8.33	4050	2.58
		East Khasi Hills	1	5.56	4050	0.96
		Jaintia Hills	1	7.69	4050	2.39
		West Garo Hills	1	7.69	4050	1.31
		West Khasi Hills	1	6.25	4050	1.99
RELIGION						
HINDUISM, ISLAM & CHRISTIANITY						
		Meghalaya	2	8.33	649008	51.58
		East Garo Hills	2	16.67	4130	2.63
		East Khasi Hills	2	11.11	350585	83.38
		Jaintia Hills	2	15.38	147742	87.36
		West Garo Hills	2	15.38	4189	1.36
		West Khasi Hills	2	12.50	142362	69.91
CHRISTIANITY & TRIBAL RELIGION						
All India: 79	1.70%	Meghalaya	4	16.67	418055	33.22
		East Garo Hills	1	8.33	124163	79.19
		East Khasi Hills	4	22.22	20369	4.84
		Jaintia Hills	3	23.08	1257	0.74
		West Garo Hills	1	7.69	249145	80.82
		West Khasi Hills	4	25.00	23121	11.35
HINDUISM (EXCLUSIVE)						
All India: 3114	67.18%	Meghalaya	5	20.83	57125	4.54
		East Garo Hills	3	25.00	10501	6.70
		East Khasi Hills	1	5.56	1253	0.30
		Jaintia Hills	1	7.69	16	0.01
		West Garo Hills	5	38.46	40351	13.09
		West Khasi Hills	2	12.50	5004	2.46
ISLAM (EXCLUSIVE)						
All India: 548	11.82%	Meghalaya	3	12.50	32400	2.57
		East Garo Hills	2	16.67	8100	5.17
		East Khasi Hills	3	16.67	12150	2.89
		Jaintia Hills	1	7.69	4050	2.39
		West Garo Hills	1	7.69	4050	1.31
		West Khasi Hills	1	6.25	4050	1.99
SIKHISM (EXCLUSIVE)						
All India: 43	0.93%	Meghalaya	1	4.17	4050	0.32
		East Khasi Hills	1	5.56	4050	0.96

BUDDHISM (EXCLUSIVE)								
All India:	57	1.23%	Meghalaya	1	4.17	666	0.05
			East Garo Hills	1	8.33	2	0.00
			East Khasi Hills	1	5.56	13	0.00
			Jaintia Hills	1	7.69	5	0.00
			West Garo Hills	1	7.69	646	0.21
CHRISTIANITY (EXCLUSIVE)								
All India:	144	3.11%	Meghalaya	1	4.17	4050	0.32
			West Khasi Hills	1	6.25	4050	1.99
HINDUISM & ISLAM								
All India:	19	0.41%	Meghalaya	1	4.17	20250	1.61
			East Garo Hills	1	8.33	4050	2.58
			East Khasi Hills	1	5.56	4050	0.96
			Jaintia Hills	1	7.69	4050	2.39
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	1	6.25	4050	1.99
HINDUISM & JAINISM								
All India:	21	0.45%	Meghalaya	1	4.17	20250	1.61
			East Garo Hills	1	8.33	4050	2.58
			East Khasi Hills	1	5.56	4050	0.96
			Jaintia Hills	1	7.69	4050	2.39
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	1	6.25	4050	1.99
HINDUISM & CHRISTIANITY & TRIBAL RELIGION								
All India:	16	0.35%	Meghalaya	4	16.67	28379	2.26
			East Khasi Hills	3	16.67	15084	3.59
			Jaintia Hills	2	15.38	5194	3.07
			West Khasi Hills	3	18.75	8101	3.98

SOCIAL ORGANIZATION

CLAN								
All India:	3001	64.75%	Meghalaya	18	75.00	1200912	95.44
			East Garo Hills	8	66.67	144634	92.25
			East Khasi Hills	12	66.67	400193	95.18
			Jaintia Hills	10	76.92	161020	95.21
			West Garo Hills	10	76.92	299525	97.16
			West Khasi Hills	14	87.50	195540	96.02
LINEAGE								
All India:	1364	29.43%	Meghalaya	7	29.17	1082577	86.04
			East Garo Hills	3	25.00	126033	80.39
			East Khasi Hills	5	27.78	380695	90.54
			Jaintia Hills	5	38.46	151852	89.79
			West Garo Hills	4	30.77	255124	82.76
			West Khasi Hills	5	31.25	168873	82.93
EXOGAMY : CLAN								
All India:	1859	40.11%	Meghalaya	18	75.00	1200912	95.44
			East Garo Hills	8	66.67	144634	92.25
			East Khasi Hills	12	66.67	400193	95.18
			Jaintia Hills	10	76.92	161020	95.21
			West Garo Hills	10	76.92	299525	97.16
			West Khasi Hills	14	87.50	195540	96.02
EXOGAMY : GOTRA								
All India:	872	18.81%	Meghalaya	2	8.33	24300	1.93
			East Garo Hills	1	8.33	4050	2.58
			East Khasi Hills	2	11.11	8100	1.93
			Jaintia Hills	1	7.69	4050	2.39
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	1	6.25	4050	1.99

RULES OF MARRIAGE

PARALLEL COUSIN MARRIAGES ALLOWED							
All India:	548	11.82%	Meghalaya	4	16.67	36450	2.90
			East Garo Hills	2	16.67	8100	5.17
			East Khasi Hills	4	22.22	16200	3.85
			Jaintia Hills	1	7.69	4050	2.39
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	1	6.25	4050	1.99
MARRIAGE WITH FATHER'S BROTHER'S DAUGHTER ALLOWED							
All India:	445	9.60%	Meghalaya	3	12.50	32400	2.57
			East Garo Hills	2	16.67	8100	5.17
			East Khasi Hills	3	16.67	12150	2.89
			Jaintia Hills	1	7.69	4050	2.39
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	1	6.25	4050	1.99
MARRIAGE WITH MOTHER'S SISTER'S DAUGHTER ALLOWED							
All India:	448	9.67%	Meghalaya	3	12.50	32400	2.57
			East Garo Hills	2	16.67	8100	5.17
			East Khasi Hills	3	16.67	12150	2.89
			Jaintia Hills	1	7.69	4050	2.39
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	1	6.25	4050	1.99
MARRIAGE WITH FATHER'S SISTER'S DAUGHTER ALLOWED							
All India:	2040	44.01%	Meghalaya	7	29.17	469795	37.34
			East Garo Hills	4	33.33	134053	85.50
			East Khasi Hills	6	33.33	36686	8.73
			Jaintia Hills	5	38.46	12101	7.16
			West Garo Hills	3	23.08	254985	82.71
			West Khasi Hills	4	25.00	31970	15.70
MARRIAGE WITH MOTHER'S BROTHER'S DAUGHTER ALLOWED							
All India:	2368	51.09%	Meghalaya	12	50.00	1126932	89.56
			East Garo Hills	5	41.67	134133	85.55
			East Khasi Hills	11	61.11	402355	95.69
			Jaintia Hills	7	53.85	156937	92.79
			West Garo Hills	4	30.77	255124	82.76
			West Khasi Hills	8	50.00	178383	87.60
UNCLE-NIECE MARRIAGE ALLOWED							
All India:	936	20.19%	Meghalaya	3	12.50	433795	34.48
			East Garo Hills	3	25.00	132263	84.36
			East Khasi Hills	3	16.67	22374	5.32
			Jaintia Hills	2	15.38	4255	2.52
			West Garo Hills	2	15.38	253195	82.13
			West Khasi Hills	2	12.50	21708	10.66
CROSS-COUSIN AND UNCLE-NIECE MARRIAGES ALLOWED BUT NOT PARALLEL							
All India:	2415	52.10%	Meghalaya	12	50.00	1126932	89.56
			East Garo Hills	5	41.67	134133	85.55
			East Khasi Hills	11	61.11	402355	95.69
			Jaintia Hills	7	53.85	156937	92.79
			West Garo Hills	4	30.77	255124	82.76
			West Khasi Hills	8	50.00	178383	87.60
MBD ONLY IS MARRIAGEABLE BUT NOT OTHER COUSINS							
All India:	337	7.27%	Meghalaya	4	16.67	653087	51.90
			East Garo Hills	1	8.33	80	0.05
			East Khasi Hills	4	22.22	361619	86.01
			Jaintia Hills	2	15.38	144836	85.64
			West Garo Hills	1	7.69	139	0.05
			West Khasi Hills	4	25.00	146413	71.90

POLYGYNY:SORORAL							
All India:	680	14.67%	Meghalaya	2	8.33	8100	0.64
			East Khasi Hills	1	5.56	4050	0.96
			West Garo Hills	1	7.69	4050	1.31
POLYGYNY:NON-SORORAL							
All India:	1145	24.70%	Meghalaya	8	33.33	76950	6.12
			East Garo Hills	3	25.00	12150	7.75
			East Khasi Hills	6	33.33	24300	5.78
			Jaintia Hills	2	15.38	8100	4.79
			West Garo Hills	3	23.08	12150	3.94
			West Khasi Hills	5	31.25	20250	9.94
SORORATE:JUNIOR ALLOWED							
All India:	2935	63.32%	Meghalaya	15	62.50	547440	43.51
			East Garo Hills	7	58.33	142155	90.67
			East Khasi Hills	13	72.22	63933	15.21
			Jaintia Hills	8	61.54	17300	10.23
			West Garo Hills	8	61.54	271831	88.18
			West Khasi Hills	10	62.50	52221	25.64
SORORATE:SENIOR ALLOWED							
All India:	300	6.47%	Meghalaya	2	8.33	8100	0.64
			East Khasi Hills	2	11.11	8100	1.93
LEVIRATE:JUNIOR ALLOWED							
All India:	1580	34.09%	Meghalaya	5	20.83	61207	4.86
			East Garo Hills	3	25.00	1964	1.25
			East Khasi Hills	5	27.78	21152	5.03
			Jaintia Hills	4	30.77	3926	2.32
			West Garo Hills	3	23.08	24358	7.90
			West Khasi Hills	3	18.75	9807	4.82
LEVIRATE:SENIOR ALLOWED							
All India:	279	6.02%	Meghalaya	5	20.83	449995	35.76
			East Garo Hills	3	25.00	132263	84.36
			East Khasi Hills	4	22.22	26424	6.28
			Jaintia Hills	2	15.38	4255	2.52
			West Garo Hills	3	23.08	257245	83.45
			West Khasi Hills	4	25.00	29808	14.64

MODES OF ACQUIRING MATES

MARRIAGE BY SERVICE							
All India:	340	7.34%	Meghalaya	2	8.33	8784	0.70
			East Khasi Hills	2	11.11	7619	1.81
			Jaintia Hills	2	15.38	1161	0.69
			West Khasi Hills	2	12.50	4	0.00
MARRIAGE BY MUTUAL CONSENT							
All India:	1197	25.83%	Meghalaya	18	75.00	1188762	94.48
			East Garo Hills	8	66.67	144634	92.25
			East Khasi Hills	13	72.22	404243	96.14
			Jaintia Hills	9	69.23	156970	92.81
			West Garo Hills	8	61.54	291425	94.54
			West Khasi Hills	13	81.25	191490	94.03
MARRIAGE BY ELOPEMENT							
All India:	629	13.57%	Meghalaya	9	37.50	1082608	86.04
			East Garo Hills	4	33.33	132343	84.41
			East Khasi Hills	7	38.89	378419	90.00
			Jaintia Hills	4	30.77	148982	88.09
			West Garo Hills	3	23.08	253334	82.18
			West Khasi Hills	6	37.50	169530	83.25

MARRIAGE BY INTRUSION							
All India:	128	2.76%	Meghalaya	1	4.17	405445	32.22
			East Garo Hills	1	8.33	124163	79.19
			East Khasi Hills	1	5.56	14274	3.39
			Jaintia Hills	1	7.69	205	0.12
			West Garo Hills	1	7.69	249145	80.82
			West Khasi Hills	1	6.25	17658	8.67
MARRIAGE BY EXCHANGE							
All India:	774	16.70%	Meghalaya	1	4.17	4050	0.32
			East Khasi Hills	1	5.56	4050	0.96
MARRIAGE BY NEGOTIATION							
All India:	4508	97.26%	Meghalaya	24	100.0	1258278	100.0
			East Garo Hills	12	100.0	156786	100.0
			East Khasi Hills	18	100.0	420456	100.0
			Jaintia Hills	13	100.0	169125	100.0
			West Garo Hills	13	100.0	308271	100.0
			West Khasi Hills	16	100.0	203640	100.0
MARRIAGE BY COURTSHIP							
All India:	293	6.32%	Meghalaya	13	54.17	742813	59.03
			East Garo Hills	6	50.00	20330	12.97
			East Khasi Hills	10	55.56	379570	90.28
			Jaintia Hills	6	46.15	159909	94.55
			West Garo Hills	5	38.46	16339	5.30
			West Khasi Hills	9	56.25	166665	81.84
MARRIAGE PAYMENTS							
BRIDE-PRICE(CASH)							
All India:	593	12.79%	Meghalaya	3	12.50	24708	1.96
			East Garo Hills	1	8.33	6279	4.00
			West Garo Hills	3	23.08	14379	4.66
			West Khasi Hills	1	6.25	4050	1.99
BRIDE-PRICE(KIND)							
All India:	119	2.57%	Meghalaya	1	4.17	655	0.05
			East Khasi Hills	1	5.56	635	0.15
			Jaintia Hills	1	7.69	17	0.01
			West Khasi Hills	1	6.25	3	0.00
BRIDE-PRICE(CASH AND KIND)							
All India:	708	15.28%	Meghalaya	2	8.33	32417	2.58
			East Garo Hills	2	16.67	4222	2.69
			East Khasi Hills	1	5.56	1253	0.30
			Jaintia Hills	1	7.69	16	0.01
			West Garo Hills	2	15.38	25972	8.43
			West Khasi Hills	1	6.25	954	0.47
DOWRY IN CASH							
All India:	169	3.65%	Meghalaya	1	4.17	8100	0.64
			East Khasi Hills	1	5.56	4050	0.96
			West Khasi Hills	1	6.25	4050	1.99
DOWRY IN KIND							
All India:	560	12.08%	Meghalaya	3	12.50	36467	2.90
			East Garo Hills	1	8.33	172	0.11
			East Khasi Hills	1	5.56	1253	0.30
			Jaintia Hills	1	7.69	16	0.01
			West Garo Hills	3	23.08	30022	9.74
			West Khasi Hills	2	12.50	5004	2.46
DOWRY(CASH AND KIND)							
All India:	1907	41.14%	Meghalaya	5	20.83	72900	5.79
			East Garo Hills	4	33.33	16200	10.33
			East Khasi Hills	4	22.22	16200	3.85
			Jaintia Hills	3	23.08	12150	7.18
			West Garo Hills	4	30.77	16200	5.26
			West Khasi Hills	3	18.75	12150	5.97

BRIDE-PRICE AND DOWRY

All India:	526	11.35%	Meghalaya	4	16.67	44567	3.54
			East Garo Hills	2	16.67	4222	2.69
			East Khasi Hills	1	5.56	1253	0.30
			Jaintia Hills	1	7.69	16	0.01
			West Garo Hills	4	30.77	34072	11.05
			West Khasi Hills	2	12.50	5004	2.46

ONLY BRIDE PRICE PAID

All India:	1052	22.70%	Meghalaya	2	8.33	13213	1.05
			East Garo Hills	1	8.33	6279	4.00
			East Khasi Hills	1	5.56	635	0.15
			Jaintia Hills	1	7.69	17	0.01
			West Garo Hills	1	7.69	6279	2.04
			West Khasi Hills	1	6.25	3	0.00

ONLY DOWRY PAID

All India:	2295	49.51%	Meghalaya	5	20.83	72900	5.79
			East Garo Hills	3	25.00	12150	7.75
			East Khasi Hills	5	27.78	20250	4.82
			Jaintia Hills	3	23.08	12150	7.18
			West Garo Hills	3	23.08	12150	3.94
			West Khasi Hills	4	25.00	16200	7.96

MEHAR:INSTANTLY PAID

All India:	153	3.30%	Meghalaya	1	4.17	20250	1.61
			East Garo Hills	1	8.33	4050	2.58
			East Khasi Hills	1	5.56	4050	0.96
			Jaintia Hills	1	7.69	4050	2.39
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	1	6.25	4050	1.99

RULES OF RESIDENCE

RESIDENCE:NEO-LOCAL

All India:	473	10.20%	Meghalaya	15	62.50	1192610	94.78
			East Garo Hills	9	75.00	142407	90.83
			East Khasi Hills	13	72.22	406261	96.62
			Jaintia Hills	9	69.23	159973	94.59
			West Garo Hills	9	69.23	289842	94.02
			West Khasi Hills	12	75.00	194127	95.33

RESIDENCE:PATRILOCAL

All India:	4517	97.45%	Meghalaya	14	58.33	171620	13.64
			East Garo Hills	8	66.67	24443	15.59
			East Khasi Hills	11	61.11	42037	10.00
			Jaintia Hills	9	69.23	20143	11.91
			West Garo Hills	10	76.92	54937	17.82
			West Khasi Hills	9	56.25	30060	14.76

RESIDENCE:MATRILOCAL

All India:	42	0.91%	Meghalaya	8	33.33	1070458	85.07
			East Garo Hills	2	16.67	124243	79.24
			East Khasi Hills	6	33.33	374369	89.04
			Jaintia Hills	4	30.77	148982	88.09
			West Garo Hills	2	15.38	249284	80.87
			West Khasi Hills	7	43.75	173580	85.24

RESIDENCE:BILOCAL

All India:	19	0.41%	Meghalaya	1	4.17	628758	49.97
			East Garo Hills	1	8.33	80	0.05
			East Khasi Hills	1	5.56	346535	82.42
			Jaintia Hills	1	7.69	143692	84.96
			West Garo Hills	1	7.69	139	0.05
			West Khasi Hills	1	6.25	138312	67.92

CHANGE IN RESIDENCE RULES							
All India:	345	7.44%	Meghalaya	4	16.67	641592	50.99
			East Garo Hills	1	8.33	80	0.05
			East Khasi Hills	3	16.67	354154	84.23
			Jaintia Hills	3	23.08	144853	85.65
			West Garo Hills	2	15.38	4189	1.36
			West Khasi Hills	3	18.75	138316	67.92
INHERITANCE AND SUCCESSION							
INHERITANCE TO LAST BORN FEMALE CHILD							
All India:	13	0.28%	Meghalaya	9	37.50	1082803	86.05
			East Garo Hills	4	33.33	132343	84.41
			East Khasi Hills	6	33.33	377009	89.67
			Jaintia Hills	3	23.08	147947	87.48
			West Garo Hills	3	23.08	253334	82.18
			West Khasi Hills	6	37.50	172170	84.55
INHERITANCE EQUAL TO BOTH MALE AND FEMALE CHILDREN							
All India:	507	10.94%	Meghalaya	1	4.17	4050	0.32
			East Khasi Hills	1	5.56	4050	0.96
INHERITANCE EQUAL TO ONLY MALE CHILDREN							
All India:	3680	79.40%	Meghalaya	12	50.00	130925	10.41
			East Garo Hills	6	50.00	16343	10.42
			East Khasi Hills	9	50.00	31297	7.44
			Jaintia Hills	8	61.54	13078	7.73
			West Garo Hills	8	61.54	46837	15.19
			West Khasi Hills	8	50.00	23370	11.48
INHERITANCE EQUAL TO ONLY FEMALE CHILDREN							
All India:	25	0.54%	Meghalaya	5	20.83	32205	2.56
			East Garo Hills	1	8.33	4050	2.58
			East Khasi Hills	3	16.67	9510	2.26
			Jaintia Hills	1	7.69	1035	0.61
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	4	25.00	13560	6.66
SUCCESSION:ELDEST SON							
All India:	4429	95.56%	Meghalaya	18	75.00	1221368	97.07
			East Garo Hills	10	83.33	148686	94.83
			East Khasi Hills	13	72.22	406261	96.62
			Jaintia Hills	11	84.62	168073	99.38
			West Garo Hills	12	92.31	304221	98.69
			West Khasi Hills	12	75.00	194127	95.33
SUCCESSION:YOUNGEST SON							
All India:	27	0.58%	Meghalaya	2	8.33	8784	0.70
			East Khasi Hills	2	11.11	7619	1.81
			Jaintia Hills	2	15.38	1161	0.69
			West Khasi Hills	2	12.50	4	0.00
SUCCESSION:YOUNGEST DAUGHTER							
All India:	5	0.11%	Meghalaya	3	12.50	20055	1.59
			East Garo Hills	1	8.33	4050	2.58
			East Khasi Hills	3	16.67	9510	2.26
			Jaintia Hills	1	7.69	1035	0.61
			West Khasi Hills	2	12.50	5460	2.68
SUCCESSION:ADOPTED SON							
All India:	117	2.52%	Meghalaya	1	4.17	4050	0.32
			East Khasi Hills	1	5.56	4050	0.96
CHANGE IN INHERITANCE RULES							
All India:	596	12.86%	Meghalaya	4	16.67	649221	51.60
			East Garo Hills	2	16.67	6359	4.06
			East Khasi Hills	3	16.67	351995	83.72
			Jaintia Hills	2	15.38	144727	85.57
			West Garo Hills	2	15.38	6418	2.08
			West Khasi Hills	2	12.50	139722	68.61

CHANGE IN SUCCESSION RULES

All India: 186	4.01%	Meghalaya	3	12.50	20055	1.59
		East Khasi Hills	3	16.67	9510	2.26
		Jaintia Hills	1	7.69	1035	0.61
		West Khasi Hills	3	18.75	9510	4.67

STATUS OF WOMEN

STATUS OF WOMEN:EQUAL

All India: 1193	25.74%	Meghalaya	11	45.83	1104828	87.80
		East Garo Hills	6	50.00	134746	85.94
		East Khasi Hills	7	38.89	373744	88.89
		Jaintia Hills	6	46.15	145079	85.78
		West Garo Hills	7	53.85	286231	92.85
		West Khasi Hills	7	43.75	165028	81.04

STATUS OF WOMEN:HIGH

All India: 92	1.98%	Meghalaya	4	16.67	28350	2.25
		East Khasi Hills	3	16.67	12150	2.89
		Jaintia Hills	1	7.69	4050	2.39
		West Khasi Hills	3	18.75	12150	5.97

STATUS OF WOMEN:LOW

All India: 3312	71.46%	Meghalaya	8	33.33	121245	9.64
		East Garo Hills	6	50.00	22040	14.06
		East Khasi Hills	7	38.89	33152	7.88
		Jaintia Hills	5	38.46	18961	11.21
		West Garo Hills	6	46.15	22040	7.15
		West Khasi Hills	5	31.25	25052	12.30

MODE OF DISPOSAL OF DEAD

DEAD IS CREMATED

All India: 3059	66.00%	Meghalaya	19	79.17	1217973	96.80
		East Garo Hills	10	83.33	148686	94.83
		East Khasi Hills	14	77.78	406896	96.77
		Jaintia Hills	11	84.62	164040	96.99
		West Garo Hills	12	92.31	304221	98.69
		West Khasi Hills	13	81.25	194130	95.33

DEAD IS BURIED

All India: 2386	51.48%	Meghalaya	14	58.33	1131863	89.95
		East Garo Hills	5	41.67	136393	86.99
		East Khasi Hills	11	61.11	391204	93.04
		Jaintia Hills	7	53.85	157099	92.89
		West Garo Hills	5	38.46	261434	84.81
		West Khasi Hills	11	68.75	185733	91.21

DEAD IS EXHUMED

All India: 8	0.17%	Meghalaya	1	4.17	628758	49.97
		East Garo Hills	1	8.33	80	0.05
		East Khasi Hills	1	5.56	346535	82.42
		Jaintia Hills	1	7.69	143692	84.96
		West Garo Hills	1	7.69	139	0.05
		West Khasi Hills	1	6.25	138312	67.92

ANCESTOR WORSHIP IS OBSERVED

All India: 3339	72.04%	Meghalaya	8	33.33	693998	55.15
		East Garo Hills	4	33.33	5922	3.78
		East Khasi Hills	6	33.33	370484	88.11
		Jaintia Hills	6	46.15	155702	92.06
		West Garo Hills	5	38.46	10675	3.46
		West Khasi Hills	4	25.00	151215	74.26

ECONOMY

MAINLY LANDOWNING COMMUNITY						
All India: 1420	30.64%	Meghalaya	14	58.33	1140009	90.60
		East Garo Hills	5	41.67	132515	84.52
		East Khasi Hills	11	61.11	391341	93.08
		Jaintia Hills	7	53.85	150159	88.79
		West Garo Hills	6	46.15	283356	91.92
		West Khasi Hills	12	75.00	182638	89.69
LANDLESS COMMUNITY						
All India: 2157	46.54%	Meghalaya	3	12.50	44961	3.57
		East Garo Hills	3	25.00	5842	3.73
		East Khasi Hills	3	16.67	12915	3.07
		Jaintia Hills	3	23.08	6816	4.03
		West Garo Hills	3	23.08	6486	2.10
		West Khasi Hills	2	12.50	12902	6.34
HUNTING AND GATHERING(CONTINUING)						
All India: 237	5.11%	Meghalaya	6	25.00	434450	34.53
		East Garo Hills	2	16.67	128213	81.78
		East Khasi Hills	4	22.22	23009	5.47
		Jaintia Hills	2	15.38	222	0.13
		West Garo Hills	3	23.08	257245	83.45
		West Khasi Hills	4	25.00	25761	12.65
SHIFTING CULTIVATION(CONTINUING)						
All India: 171	3.69%	Meghalaya	8	33.33	1063042	84.48
		East Garo Hills	2	16.67	124243	79.24
		East Khasi Hills	6	33.33	373888	88.92
		Jaintia Hills	6	46.15	150143	88.78
		West Garo Hills	2	15.38	249284	80.87
		West Khasi Hills	7	43.75	165484	81.26
TERRACE CULTIVATION(CONTINUING)						
All India: 221	4.77%	Meghalaya	7	29.17	1066603	84.77
		East Garo Hills	2	16.67	124243	79.24
		East Khasi Hills	5	27.78	372959	88.70
		Jaintia Hills	3	23.08	147947	87.48
		West Garo Hills	2	15.38	249284	80.87
		West Khasi Hills	6	37.50	172170	84.55
SETTLED CULTIVATION(CONTINUING)						
All India: 2508	54.11%	Meghalaya	17	70.83	1189428	94.53
		East Garo Hills	9	75.00	144636	92.25
		East Khasi Hills	12	66.67	396156	94.22
		Jaintia Hills	11	84.62	161025	95.21
		West Garo Hills	11	84.62	300171	97.37
		West Khasi Hills	12	75.00	187440	92.04
SETTLED CULTIVATION(TRADITIONAL)						
All India: 1628	35.12%	Meghalaya	13	54.17	146636	11.65
		East Garo Hills	7	58.33	20393	13.01
		East Khasi Hills	8	44.44	30368	7.22
		Jaintia Hills	6	46.15	14932	8.83
		West Garo Hills	9	69.23	50887	16.51
		West Khasi Hills	7	43.75	30056	14.76
SETTLED CULTIVATION(NEWLY ACQUIRED)						
All India: 1091	23.54%	Meghalaya	5	20.83	1046842	83.20
		East Garo Hills	2	16.67	124243	79.24
		East Khasi Hills	5	27.78	369838	87.96
		Jaintia Hills	5	38.46	146093	86.38
		West Garo Hills	2	15.38	249284	80.87
		West Khasi Hills	5	31.25	157384	77.29

ANIMAL HUSBANDRY (CONTINUING)							
All India:	999	21.55%	Meghalaya	14	58.33	1151835	91.54
			East Garo Hills	6	50.00	140412	89.56
			East Khasi Hills	8	44.44	392845	93.43
			Jaintia Hills	6	46.15	155902	92.18
			West Garo Hills	8	61.54	273553	88.74
			West Khasi Hills	10	62.50	189123	92.87
TEXTILE WEAVING(CONTINUING)							
All India:	312	6.73%	Meghalaya	7	29.17	1091162	86.72
			East Garo Hills	4	33.33	130694	83.36
			East Khasi Hills	5	27.78	370456	88.11
			Jaintia Hills	5	38.46	146092	86.38
			West Garo Hills	5	38.46	281535	91.33
			West Khasi Hills	6	37.50	162385	79.74
METAL WORK(CONTINUING)							
All India:	145	3.13%	Meghalaya	2	8.33	652803	51.88
			East Garo Hills	2	16.67	1870	1.19
			East Khasi Hills	2	11.11	355387	84.52
			Jaintia Hills	2	15.38	146453	86.59
			West Garo Hills	2	15.38	1929	0.63
			West Khasi Hills	2	12.50	147164	72.27
BASKET MAKING(CONTINUING)							
All India:	306	6.60%	Meghalaya	9	37.50	1094503	86.98
			East Garo Hills	4	33.33	130083	82.97
			East Khasi Hills	6	33.33	379171	90.18
			Jaintia Hills	5	38.46	151743	89.72
			West Garo Hills	4	30.77	255124	82.76
			West Khasi Hills	7	43.75	178382	87.60
MAT WEAVING(CONTINUING)							
All India:	160	3.45%	Meghalaya	8	33.33	1074703	85.41
			East Garo Hills	3	25.00	128293	81.83
			East Khasi Hills	5	27.78	372959	88.70
			Jaintia Hills	3	23.08	147947	87.48
			West Garo Hills	3	23.08	253334	82.18
			West Khasi Hills	6	37.50	172170	84.55
FISHING AS PAST-TIME(CONTINUING)							
All India:	86	1.86%	Meghalaya	11	45.83	1131633	89.94
			East Garo Hills	6	50.00	138794	88.52
			East Khasi Hills	7	38.89	375622	89.34
			Jaintia Hills	5	38.46	148998	88.10
			West Garo Hills	8	61.54	293685	95.27
			West Khasi Hills	8	50.00	174534	85.71
SWEEPER							
All India:	41	0.88%	Meghalaya	1	4.17	4050	0.32
			East Khasi Hills	1	5.56	4050	0.96
BARTER EXISTS							
All India:	85	1.83%	Meghalaya	2	8.33	636858	50.61
			East Garo Hills	2	16.67	4130	2.63
			East Khasi Hills	1	5.56	346535	82.42
			Jaintia Hills	1	7.69	143692	84.96
			West Garo Hills	2	15.38	4189	1.36
			West Khasi Hills	1	6.25	138312	67.92
CHILD LABOUR EXISTS							
All India:	2008	43.32%	Meghalaya	16	66.67	1188928	94.49
			East Garo Hills	9	75.00	148684	94.83
			East Khasi Hills	11	61.11	395849	94.15
			Jaintia Hills	8	61.54	158841	93.92
			West Garo Hills	9	69.23	295475	95.85
			West Khasi Hills	11	68.75	190079	93.34

ART AND CRAFT : MODELING						
All India: 138	2.98%	Meghalaya	3	12.50	24300	1.93
		East Garo Hills	1	8.33	4050	2.58
		East Khasi Hills	2	11.11	8100	1.93
		West Garo Hills	1	7.69	4050	1.31
		West Khasi Hills	2	12.50	8100	3.98
ART AND CRAFT : CARVING						
All India: 184	3.97%	Meghalaya	4	16.67	648813	51.56
		East Garo Hills	1	8.33	80	0.05
		East Khasi Hills	4	22.22	356045	84.68
		Jaintia Hills	2	15.38	144727	85.57
		West Garo Hills	1	7.69	139	0.05
		West Khasi Hills	4	25.00	147822	72.59
ART AND CRAFT : ENGRAVING						
All India: 134	2.89%	Meghalaya	2	8.33	632808	50.29
		East Garo Hills	1	8.33	80	0.05
		East Khasi Hills	1	5.56	346535	82.42
		Jaintia Hills	2	15.38	147742	87.36
		West Garo Hills	1	7.69	139	0.05
		West Khasi Hills	1	6.25	138312	67.92
ART AND CRAFT : DRAWING						
All India: 176	3.80%	Meghalaya	1	4.17	628758	49.97
		East Garo Hills	1	8.33	80	0.05
		East Khasi Hills	1	5.56	346535	82.42
		Jaintia Hills	1	7.69	143692	84.96
		West Garo Hills	1	7.69	139	0.05
		West Khasi Hills	1	6.25	138312	67.92
ART AND CRAFT : BODY TATTOOING						
All India: 161	3.47%	Meghalaya	1	4.17	8129	0.65
		East Khasi Hills	1	5.56	6984	1.66
		Jaintia Hills	1	7.69	1144	0.68
		West Khasi Hills	1	6.25	1	0.00
ART AND CRAFT : POTTERY						
All India: 112	2.42%	Meghalaya	5	20.83	669003	53.17
		East Garo Hills	2	16.67	1870	1.19
		East Khasi Hills	4	22.22	363487	86.45
		Jaintia Hills	3	23.08	150503	88.99
		West Garo Hills	2	15.38	1929	0.63
		West Khasi Hills	3	18.75	151214	74.26
ART AND CRAFT : WEAVING						
All India: 563	12.15%	Meghalaya	8	33.33	474554	37.71
		East Garo Hills	4	33.33	134664	85.89
		East Khasi Hills	5	27.78	27971	6.65
		Jaintia Hills	4	30.77	2400	1.42
		West Garo Hills	5	38.46	285446	92.60
		West Khasi Hills	5	31.25	24073	11.82
ART AND CRAFT : BASKETRY						
All India: 577	12.45%	Meghalaya	12	50.00	1107308	88.00
		East Garo Hills	4	33.33	130083	82.97
		East Khasi Hills	8	44.44	383856	91.30
		Jaintia Hills	6	46.15	151760	89.73
		West Garo Hills	5	38.46	259174	84.07
		West Khasi Hills	9	56.25	182435	89.59
ART AND CRAFT : EMBROIDERY ON CLOTH						
All India: 428	9.23%	Meghalaya	1	4.17	628758	49.97
		East Garo Hills	1	8.33	80	0.05
		East Khasi Hills	1	5.56	346535	82.42
		Jaintia Hills	1	7.69	143692	84.96
		West Garo Hills	1	7.69	139	0.05
		West Khasi Hills	1	6.25	138312	67.92

ART AND CRAFT : SILVER AND GOLDTHREAD ART

All India:	76	1.64%	Meghalaya	3	12.50	48345	3.84
			East Garo Hills	2	16.67	5840	3.72
			East Khasi Hills	3	16.67	16952	4.03
			Jaintia Hills	2	15.38	6811	4.03
			West Garo Hills	2	15.38	5840	1.89
			West Khasi Hills	2	12.50	12902	6.34

MEDICARE AND FAMILY WELFARE

INDIGENOUS MEDICARE FAVOURED

All India:	3122	67.36%	Meghalaya	16	66.67	1136350	90.31
			East Garo Hills	5	41.67	138622	88.41
			East Khasi Hills	10	55.56	390088	92.78
			Jaintia Hills	7	53.85	154193	91.17
			West Garo Hills	7	53.85	271763	88.16
			West Khasi Hills	11	68.75	181684	89.22

MODERN MEDICARE FAVOURED

All India:	4244	91.56%	Meghalaya	22	91.67	1250373	99.37
			East Garo Hills	12	100.0	156786	100.0
			East Khasi Hills	16	88.89	414996	98.70
			Jaintia Hills	12	92.31	168090	99.39
			West Garo Hills	13	100.0	308271	100.0
			West Khasi Hills	15	93.75	202230	99.31

FAMILY WELFARE PROGRAMMES FAVOURED

All India:	3539	76.35%	Meghalaya	12	50.00	555057	44.11
			East Garo Hills	7	58.33	142325	90.78
			East Khasi Hills	10	55.56	52729	12.54
			Jaintia Hills	6	46.15	15132	8.95
			West Garo Hills	8	61.54	293107	95.08
			West Khasi Hills	9	56.25	51764	25.42

PREFER ONE OR TWO CHILDREN

All India:	780	16.83%	Meghalaya	2	8.33	24300	1.93
			East Garo Hills	1	8.33	4050	2.58
			East Khasi Hills	2	11.11	8100	1.93
			Jaintia Hills	1	7.69	4050	2.39
			West Garo Hills	1	7.69	4050	1.31
			West Khasi Hills	1	6.25	4050	1.99

PREFER THREE CHILDREN

All India:	2515	54.26%	Meghalaya	6	25.00	84812	6.74
			East Garo Hills	4	33.33	10062	6.42
			East Khasi Hills	4	22.22	18205	4.33
			Jaintia Hills	4	30.77	10877	6.43
			West Garo Hills	4	30.77	31812	10.32
			West Khasi Hills	3	18.75	13856	6.80

PREFER FOUR CHILDREN

All India:	1123	24.23%	Meghalaya	11	45.83	90450	7.19
			East Garo Hills	4	33.33	12152	7.75
			East Khasi Hills	10	55.56	35982	8.56
			Jaintia Hills	5	38.46	9266	5.48
			West Garo Hills	4	30.77	12796	4.15
			West Khasi Hills	7	43.75	20254	9.95

REPORT OF THE WORK CARRIED OUT IN CONNECTION WITH THE MULTIVARIATE STATISTICAL ANALYSIS OF THE DATA GENERATED UNDER THE PEOPLE OF INDIA PROJECT.

The work carried out during 1993-1994 can be described under three broad categories :

(i) checking the internal consistency of the traitwise data, and if necessary, reorganize it appropriately,

(ii) explore the various methods of multivariate analysis so as to choose the more suitable ones for the data under consideration, and

(iii) computerize the 1931 census data so that it can be linked with the POI data for further analysis.

The next three sections describe in detail the work connected with these three aspects.

CHECKING INTERNAL CONSISTENCY AND REORGANIZATION OF THE DATA

1. In the set of trait numbers 1, 2, 3 & 4 (identification local - transnational) sl. no. 3, 2 & 1 were made 0 when sl.no. 4 was 1. Again sl. no. 2 & 1 were made 0 when sl. no. 3 was 1. Again sl.no. 1 was made 0 when sl. no. 2 was 1. Lack of data was filled in consulting the writeups. After the corrections of sl.no. 1 to 4, the counts are as follows:

   sl.no. 1 = 1085
   sl.no. 2 = 2750
   sl.no. 3 = 678
   sl.no. 4 = 122

2. If sl.no. 13 (migrated in recent years) was 1, sl. no. 10 (migration to present habitat) was made 1. Thus sl. no. 10 includes sl. no. 13. and sl. no. 10 increased from 2780 to 2813.

3. (a) In the set of trait numbers 14, 15, 16 & 17 (distribution: local-national), sl. no. 16, 15 & 14 were made 0 if sl. no. 17 was 1. Again sl. no. 15 & 14 were made 0 if sl. no. 16 was 1. Again sl. no. 14 was made 0 when sl. no. 15 was 1. After all these replacements in this set, the counts are as follows:

   sl. no. 14 = 915
   sl. no. 15 = 1917
   sl. no. 16 = 830
   sl. no. 17 = 796

177 communities lack data on distribution (this is not filled in).

(b) Sl. no. 32 (island) was made zero for one community in Manipur.

4. The total number of combinations sl. no. 87 & 88 were 61.

(a) Either sl. no. 87 (occasional non-veg.) = 1 or sl. no. 88 (reg. non-veg) = 1, a new sl. no. was created, i.e., sl. no. 777 (non-veg). The total no of sl. no. 777 was 3970.

(b) If sl. no. 92 (non-veg beef, cow) = 1 and sl. no. 777 = 0, then sl. no. 777 was made 1. The number increased was 28, sl. no. 777 going up to 3998.

(c) If sl. no. 93 (non-veg beef, ox) = 1 and sl. no. 777 = 0, then sl. no. 777 was made 1. The total number updated to sl. no. 777 was 8, and the count increased to 4008.

(d) If sl. no. 94 (non-veg pork) = 1 and sl. no. 777 = 0, sl. no. 777 was made 1. With this total number of sl. no. 777 increased to 4018 by adding another 8.

(e) If sl. no. 94 (non-veg carrion) = 1 and 777 = 0, 777 was made 1. In this process sl. no. 777 increased by 1 and final count of non-vegetarians became 4019.

5. All communities thus reported as non-vegetarians (sl. no. 777) were compared with sl. nos. 77, 78, 79, 80, 81, 82 & 83 (which were reported as vegetarians of one or the other type) and the number of combinations with non-vegetarians (sl. no. 777) were found as follows :

sl. no. 777 with 77 = 182
78 = 107
79 = 138
80 = 121
81 = 35
82 = 37
83 = 36

6. Sl. nos. 77, 78, 79, 80, 81, 82 & 83 were made 0, if sl. no. 777 was 1.

7. (a) If sl. no. 92 (beef of cow) = 1 and sl. no. 93 (beef of ox) = 0, sl. no. 93 was made 1 (if they eat cow why not ox?). After clubbing sl. no. 93 became 949. Thus now sl. no. 93 is no-vegetarian with beef inclusive of cow and beef and sl. no. 92 specifically points to beef of cow.

(b) If sl. no. 100 was 1 and sl. no. 102 was 0, sl. no. 102 was made 1, after clubbing sl. no. 102 became 688, i.e., now ragi includes nagli. sl. no. 100 is redundant.

8. (a) If sl. no. 125 (men take alcoholic drinks occasionally) = 1 or sl. no. 127 (men take alcoholic drinks regularly) = 1 a new sl. no. 778 was created, i.e., men take alcoholic drinks. Total no of sl. no. 778 updated is 3536.

(b) If sl. no. 126 (women take alcoholic drinks occasionally) = 1 or sl. no. 128 (women take alcoholic drinks regularly) = 1 a new sl. no. 779 is created, i.e., (women take alcoholic drinks). Total no of sl. no. 779 is 1263.

9. If sl. no. 79 = 1 and sl. no. 80 = 0 then clubbed with sl. no. 80 was made 1. Thus sl. no. 80 represents vegetarians with egg and sl. no. 79 is redundant.

Following are the counts of the combinations :

10. If sl. no. 90 = 1 and sl. no. 777 = 1
total no of combinations are 3339

11. If sl. no. 91 = 1 and sl. no. 777 = 1
total no of combinations are 73

12. If sl. no. 90 = 1 and sl. no. 91 = 1
total no of combinations are 26

13. If sl. no. 90 = 1 and sl. no. 777 = 0
total no of combinations are 10

14. If sl. no. 91 = 1 and sl. no. 777 = 0
total no of combinations are 2

15. The case of sl. no. 779 = 1 and 778 = 0
(women drink men do not) were 11.

If sl. no. 779=1 then 778 was made 1, consequently sl. no. 778 increased to 3547.

16. If sl. no. 78 (eat fish) = 1 and sl. no. 77 (pure veg.) = 1, then sl. no. 77 was made 0.

17. If sl. no. 80 (eat egg) = 1 and sl. no. 77 (pure veg.) = 1, then sl. no. 77 was made 0.

18. If sl. no. 91 (women cook non-veg. but not eat) = 1, and sl. no. 90 (women eat non-veg.) = 1, then sl. no. 90 was made 0.

19. If sl. no. 90 (women eat non-veg.) = 1 and 77 (pure veg.) = 1, then sl. no. 77 was made 0.

20. Sl. no. 174, 175 & 176 (self perception; high, middle & low) taken as a set, lack of data was noticed for 44 communities. Minor errors were corrected consulting the writeups.

21. If sl. no. 180, 181, 182 or 183 = 1 (Brahman, Kshatriya, Vaishya and Sudra), sl. no. 179 (recognize place in varna) was made 1 otherwise sl. no. 179 was made 0. In this process total no. of sl. no. 179 = 1 became 2757. Thus sl. no. 179 gives correct figure of how many communities recognize a place for themselves in varna system.

22. Sl. no. 184, 185 & 186 (other's perception; high, middle & low) taken as a set, it was observed that 55 communities lacked data. Minor errors were rectified after referring to writeups.

23. Sl. no. 194, 196, 197, 198 & 199 constitute a set giving information on the level of exogamy a community practice. Normally, exogamy cannot be at more than one level. It could be more than one if a community is heterogeneous or is in the process change in terms of rules of exogamy. Combinations in this set were checked for such cases. Then corrections were carried out for these combination categories recognizing the correct level of exogamy after consulting the writeups. However, 869 communities either lack data on exogamy or the rule of exogamy is not relevant to them.

24. If sl. no. 203 = 1 (FBD) or sl. no. 204 = 1 (MSD) then, sl. no. 202 was made 1, total no of sl. no. 202 increased to 548 which gives number of communities in which parallel cousin marriage is allowed.

25. In most of the cases where polygyny was reported (sl. no. 229 & 230), monogamy (sl. no. 226) was also reported. There were a few groups which reported only polygyny. These were checked with the writeups and it was found that monogamy is also permitted among them. Hence following corrections were made and monogamy increased from 4579 to 4610.

26. (a) If sl. no. 235=1, then sl. no. 208 was made 1, final total of sl. no. 208 increased to 2935. Thus sl. no. 208 now represents sororate junior and sl. no. 235 is redundant.

(b) If sl. no. 234 = 1, then sl. no. 209 was made 1, final total of sl. no. 209 increased to 300. Now sl. no. 209 represents senior sororate and sl. no. 234 is invalid.

(c) If sl. no. 233 = 1, then sl. no. 210 was made 1, final total sl. no. 210 increased to 1580. Thus sl. no. 210 gives the number of junior levirate and sl. no. 233 is invalid.

(d) If sl. no. 232 = 1, then sl. no. 211 was made 1, final total sl. no. 211 increased to 279 which gives the number of senior levirate and sl. no. 232 is invalid.

27. If sl. no. 245 (bride price in cash) = 1 and sl. no. 246 (bride price in kind) = 1, then sl. no. 247 (bride price in cash and kind) was made 1, total number of sl. no. 247 increased to 708. Again if sl. no. 247 (bride price in cash and kind) = 1, then sl. no. 245 and 246 were made 0, which decreased to 593 and 119, respectively.

28. If sl. no. 249 (dowry in cash) = 1 or sl. no. 250 (dowry in kind) = 1, then sl. no. 251 (dowry in cash and kind) was made 1, total no of sl. no. 251 increased to 1907. Again if sl. no. 251 = 1, then sl. no. 249 and 250 were made 0 which decreased to 169 and 560, respectively.

29. In serial numbers 351, 352 and 353 (status of women: equal, high and low), a few communities were shown as dual status for women. This was checked with the writeups and corrections were made in case of such combinations. Data are lacking for this trait on 38 communities.

30. Sl. no. 367 (female circumcision) was made 0 in all 4635 records total no of zeros replaced were 3. This trait was reported to exist among Daudi Bohra, a Muslim trading caste, but there is no clear confirmation. As such this trait stands deleted.

31. In the set of sl. no. 375, 376 and 377 (trait on marriage feast) corrections were made as follows :

If sl. no.	376 & 377 = 1	then	sl. no.	376 was made 0
	375 & 377 = 1	then		375 was made 0
	375 & 376 = 1	then		375 was made 0
	375, 376 & 377 = 1	then		375 & 376 was made 0

32. In the set sl. no. 400, 406 and 407 (mainly landowning, landholding and landless), 116 groups were reported to be mainly landowning and at the same time landless. This was

checked with writeups and were found to be mainly landowning and hence correction was made to sl. no. 407 which was reduced by 116. There are 508 groups which have no data on land or it is not applicable to them, 1795 groups are totally landless, 362 are both landholding and landless, another 497 fall between mainly landowning to landholding categories.

33. Sl. no. 409, 451 and 493 (fishing; C, T & NAQ) were made 0 for the states of Manipur, Meghalaya, Nagaland, Arunachal Pradesh and Mizoram and files were created for reference to deletion are as follows :

409-code.fil	86 records
451-code.fil	104
493-code.fil	8

Fishing in these states is a past-time occupation of many tribes. This correction was suggested in Calcutta workshop.

34. In the set sl. no. 552, 553 and 554 (payment in kind, cash, and both) corrections are made as follows :

If sl. no.	553 & 554 = 1	then	sl. no.	553 was made 0	
"	552 & 554 = 1	"	"	552 was made 0	
"	552 & 553 = 1	"	"	552 & 553 were made 0	554 was made 1
"	552, 553 & 554 = 1	"	"	552 & 553 were made 0	

35. In the set sl. no. 635, 636, 637 and 638 (folk song sung by community, men, women and both, corrections are made as follows :

If sl. no.	638 = 1	then	sl. no.	made 0	635 was made 1
	637 = 1	then			635 "
	637 & 638 = 1			637 "	635 "
	636 & 637 = 1		636 &	637 "	635 "
	635, 637 & 638 = 1			637 "	
	635, 636 & 638 = 1			636 "	
	635, 636 & 637 = 1			636 & 637 "	638 "
	635, 636, 637 & 638 = 1			636 & 637 "	

In this set data are lacking on 937 groups or they do not have folksongs.

36. In the set of sl. no. 648, 649 and 650 (dancing : men, women and both) corrections are made as follows :

If sl. no.	649 & 650 = 1	then	sl. no.	649 made 0	
	648 & 650 = 1			648 "	
	648 & 649 = 1			648 & 649 "	650 made 1
	648,649 & 650 = 1			648 & 649 "	

There are 2769 groups which do not have the trait of dancing

37. In the set sl. no. 682 to 685 (education favourable for boys, girls, partly for boys, girls), minor corrections were made for those groups which showed more than one trend after consulting the writeup.

MULTIVARIATE ANALYSIS OF THE DATA ON TRAITS: WHEN WILL A TRAIT BE SEEN?

As a case study, the investigation for the trait of desired number of offspring (1-2, 3 and 4 or more) is described. The objective here is to identify the set of traits associated with the preference for a small family (and also those which go together with a large family) along with some measure of the relative magnitudes of their influences. Primarily, the analysis is confined to 1-2 versus 4 or more. However, dichotomies like 1-2 and 3 versus 4 or 1-2 versus 3 and above are also considered. The more elaborate logistic regression using the three as multiple response categories may also be attempted in future.

Association between traits

For a pair of traits, a measure of association is to be computed, based on their co-occurrence (or avoidance of occurring) in the same community. These may be computed for all-India, as well as for states/UTs, or zones separately. These measures could be used for carrying out clustering of traits by a variety of algorithms.

For the analysis which follows, Pearson's product-moment correlation coefficient has been used as a primary measure of association, and statistical significance has been tested using the Bonferroni criterion since multiple comparisons are involved.

Only those traits which are shown by at least 30 communities have been included in the analysis. The number of traits comes down to about 700 as a result. This cut-off is arbitrary, and may be replaced by other criteria.

The Goodman-Kruskal index, based on the reduction in the number of erroneous prediction of one trait, based on the knowledge of the presence or absence of another trait, has also been used. In general, association is considered worthy of further consideration only if it is high on both these counts.

Other possible measures may include :

(i) the chi-square statistic of the 2X2 contingency table,

(ii) the difference in the proportion of say trait i, between two groups, one with trait k and the other without,

(iii) log-odds ratio etc.

Short-listing of traits

The traits which showed a significant correlation at 0.05 level, and a non-zero association by Goodman-Kruskal index have been identified; this number comes to about a hundred. For further multivariate analysis, only these traits have been included. Described below are some attempts at the multivariate statistical analysis. Most of the analysis has been carried out only for the south zone due to a higher homogeneity, distinctness and stability of culture.

(i) **The chi-square criterion :**

Identify that trait which has the largest value of chi-square for the 2 x 2 contingency table (2 vs 4 family size, presence/absence of the trait). This turns out to be 'Family planning favoured'.

Next, 2 x 4 contingency tables are considered, with Family Planning Favoured as one of the traits, and each of the other traits one by one. Here, chi square is maximum when the next trait to be included is 'Use Modern methods of family planning'.

In an analogous manner, examination if 2X8 tables leads to 'Savings favoured' and 2X16 tables yield 'Community has teachers'. One can continue in this manner to add more traits.

However, this may not be the best method because the contribution to the chi square value is very unequal for the different cells. Secondly, it is not easy to judge the relative contributions of the traits. Thirdly, the highest and the next highest may be quite close, so the choice of the 'best' may not necessarily be the most appropriate. Fourthly, this does not consider all possible triplets, say, since the first trait used is 'frozen'.

(ii) **Nested analysis using Pearson's r :**

In this approach, the trait with a highest correlation with a small family size is identified, which turns out to be 'family planning favoured (r=0.585). Next, only amongst those communities which show this trait, the trait with highest correlation is identified, which is 'annaprashana' (r=0.2961). One can continue in this manner to find a set of traits in a hierarchical manner.

The disadvantage is that the number of communities in the set at each subsequent stage becomes smaller. The advantage is that the traits whose influence is due to their being associated with the first trait are automatically eliminated.

(iii)**Goodman-Kruskal's predictability index :**

In the south zone, 251 communities prefer 2 children, while 160 prefer 4 or more children. In the absence of any other information, by predicting that all the communities prefer two children, there will be 251 correct and 160 wrong predictions, thus 0.389 being the proportion of errors in the prediction. The trait with highest predictability for a small family size is 'family planning favoured'; knowing the presence or absence of this trait reduces the number of errors to 81. The next trait whose knowledge leads to a maximum reduction in the number of errors is 'scheduled castes', whereby 74 errors remain. The next trait 'child labour' reduces six more errors and so on. With the knowledge of 15 traits, a perfect prediction can be made.

(iv) **Multiple regression on log-likelihood ratios :**

If f2 and f4 are the proportions of communities showing preference for 2 and 4 children, one can write down the regression equation for predicting the proportions of such communities in the presence and absence of a trait as

$$\ln (f2/f4) = A + B.X$$

where A and B are constants, and X=0 or 1, depending whether a trait is present or absent. For two or more traits, this equation becomes

$$\ln (f2/f4) = A + B1.X1 + B2.X2 + ...+Bn.Xn$$

with n traits, there would be 2**n-1 classes, and the n+1 constants can be determined from the regression equation.

To begin with, by carrying out the regression analysis for all pairs of traits, the pair which shows the least mean square error is identified. At the next stage, one trait from the remaining set is added to these two, and the mean square error obtained for all such triplets. The trait which gives the smallest m.s.e. is retained for the next stage. At every stage, whether the regression coefficients are significantly different from zero is determined. The process is terminated when addition of one more trait leads to at least one regression coefficient not significantly different from zero.

The advantage of the method is the automatic termination, and the knowledge of the relative importance of the traits as seen by their regression coefficients. Thus, one set obtained from the analysis is :

Constant = 1.0472
Savings favoured, coefficient = 0.9028
Girls study upto post-graduate level = 0.5721
Trapping of birds and animals as a traditional occupation = -0.6509
Religion muslim = -0.6742

Nuptial at grooms residence = -0.7346
Labour as current occupation = -0.6161
Remarriage of widows permitted = -0.6648

The signs of the coefficients (+ve preferring a small family, -ve for a large family), at least for some of the traits are not inconsistent with what one expects.

The disadvantages are (a) the goodness of fit criterion rejects all such fits, (b) number of classes becomes large rather rapidly with the number of variables, so the number of communities in each class may be small (though this has been to some extent corrected for by using the weighted least square approach), and (c) as usual, the choice of subsequent traits is dictated by the earlier traits.

Two other techniques which may be used for subsequent analysis are : (i) Discriminant analysis, which gives weightages for different variables to optimally bring out the differences between two or more prespecified groups, and (ii) Canonical correlations, which may be used to correlate two groups of traits (or perhaps communities).

(v) **Selecting traits based on correlations in different subsets:**

An alternative way of selecting important traits correlated with a particular trait is to look for correlations in various subsets. Thus, within the south zone, correlations have been calculated for 2 vs 4, 2 vs 3&4 and 2&3 vs 4, as different ways of classifying small and large family size preferences. Those traits which show a significant positive correlation in all the three categories may be regarded as the most important, and the index of importance may be the average correlation coefficient. Next one can use those which are significantly positive correlation in at least two groups, etc. In the south zone, this leads to

Savings favoured
Community has scholars
Education for girls is favoured
Community has Engineers/doctors
Annaprashan ceremony
Education for boys is favoured
Kanyadan exists
Girls study upto college level

as traits significantly positive in all three classifications, and

Child labour
Self perception : low
Landless community
Remarriage : widow

as traits significantly negatively correlated in all the three.

A manuscript discussing the above results, and dealing mainly with the methodological issues in the analysis of this data, is currently under preparation.

COMPUTERIZATION OF THE 1931 CENSUS DATA

During the year 1993-94, computerization of district-wise population figures from 1931 Census was taken up mainly for two reasons:

1. For district-wise analysis of POI data, an estimate of population of different communities in various districts was essential. It was also necessary to have complete data on district-wise distribution of communities for taking analysis down to district level.

2. In addition to building up data on district-wise distribution of communities, computerization of 1931 Census gave a chance make comparative study of communities covered in POI project and those mentioned in the 1931 Census.

The above work involved feeding of 31752 entries from 1931 Census. After the feeding was over, equivalence between community names which occurred in 1931 and in POI project was established. Further, equivalence between the districts of 1931 and present day districts was also established.

Details of computerization work on various provinces/states of 1931 Census is given below :

Slno.	Province/ State	No. of entries
1	Ajmer State	243
2	Andaman & Nicobar	104
3	Assam Province	1055
4	Baroda State	1376
5	Central Provinces & Berar	3401
6	Bihar & Orissa	1116
7	Bombay Province	4102
8	Calcutta Residency	514
9	Central India Agency	4276
10	Cochin State	128
11	Coorg State	47
12	Delhi Residency	143
13	Gwalior State	2346
14	Dominion of H.E.H. Nizam	801
15	Jammu & Kashmir State	1282
16	Mayurbhanj State	526
17	Punjab Province	6209
18	Rajputana Agency	578
19	Travancore State	875
20	Western India Agency	2630
	Total	31752

A preliminary analysis of 1931 Census and POI data is reported in the following :

Among 2753 unique communities:

		Unique Communities	
I	Population /distribution available only in 1981...	281	(144 only in 1981 137 in 1981 and also in gazetteers)
II	Population /distribution available only in 1931...	582	(318 only in 1931 264 in 1931 and also in gazetteers)
III	Population /distribution available both in 1981 and 1931	376	(158 in 1931 & 1981 218 in 1931, 1981 & also in gazetteers)
IV	Distribution available only in gazetteers and monographs	224	
V	Nothing	1290	
	Total	2753	

Among 4635 communities

I	Population /distribution available only in 1981...	381	(190 only in 1981 191 in 1981 and also in gazetteers)
II	Population /distribution available only in 1931...	1431	(684 only in 1931 747 in 1931 and also in gazetteers)
III	Population /distribution available both in 1981 and 1931	1044	(432 in 1931 & 1981; 612 in 1931, 1981 & also in gazetteers)
IV	Distribution available only in gazetteers and monographs	313	
V	Nothing	1466	
	Total	4635	

If we go by unique communities, we do not have distribution for 47%, but by the 4635 yardstick, the gap is for 32% of the communities.

Out of 1466 (nothing) + 313 (gazetteers) = 1779 communities, 1337 are found only one state while 177 in 72 states (177*x=442). Thus it would appear that the communities for which population figures are not available are small communities found in one state and probably confined to few districts. This is expected as the 1931 census has a cut off and do not give figures for communities less that 1% or 0.5% or something like "representing four per mille of the total population" .

Further, within these 1779, the breakup is as follows:

Subgroups	427
Christian	95
Muslim	39
Jain	22
Sikh	13
Bania	14
Brahmin	65
	675
- overlap	61
	614

For the above 614, it is unlikely that population figures are available. We will then be left with 1165 elements of 4635 or 974 unique of the same (around 25%). These communities are a mixed lot as follows.

II. Non-equitable groups:

Communities like Bahai, Bengali, Irani, Indo-Vietnamese, Ex-servicemen, Iraqi, Srilankan repatriates, etc.

III. New communities:

Bishnupriya-Manipuri, Shia Imami Islami, Desh Bhandari, Rama Kshatriya, Quam-E-Punjabian, Parkavakulam, etc.

IV. There are some duplicate unique codes for the same community in 2753 (e.g.. Chattada Shri Vaishnava/ Satani)

V. There are some duplicate communities in POI itself e.g.. Dombari = Kolhati, Nishi = Bangni, etc.

After a careful study, the gap may come down by another 200 or so i.e. around 700 unique. Out of these for some 200 or 300 we may never get any equivalence in old records. Finally, for some 200 or 300, population could be available in censuses before 1931.

REPORT OF THE WORK CARRIED OUT IN CONNECTION WITH THE MULTIVARIATE STATISTICAL ANALYSIS OF THE DATA GENERATED UNDER THE PEOPLE OF INDIA PROJECT.

The work carried out during 1993-1994 can be described under three broad categories :

(i) checking the internal consistency of the traitwise data, and if necessary, reorganize it appropriately,

(ii) explore the various methods of multivariate analysis so as to choose the more suitable ones for the data under consideration, and

(iii) computerize the 1931 census data so that it can be linked with the POI data for further analysis.

The next three sections describe in detail the work connected with these three aspects.

CHECKING INTERAL CONSISTENCY AND REORGANIZATION OF THE DATA

~~REPORT ON CLEANING OF DATA OF POI PROJECT (SEPT.-OCT., 1993).~~

1. Data on identification were checked for the states of Manipur, Meghalaya, Nagaland, Arunachal Pradesh & Mizoram and corrections were made for those wrongly assigned as transnational.

1. In the set of trait numbers 1, 2, 3 & 4 (identification local - transnational) sl. no. 3, 2 & 1 were made 0 when sl.no. 4 was 1. Again sl. no. 2 & 1 were made 0 when sl. no. 3 was 1. Again sl.no. 1 was made 0 when sl. no. 2 was 1. Lack of data was filled in consulting the writeups. After the corrections of sl.no. 1 to 4, the counts are as follows:

sl.no. 1 = 1085
sl.no. 2 = 2750
sl.no. 3 = 678
sl.no. 4 = 122

2. If sl.no. 13 (migrated in recent years) was 1, sl. no. 10 (migration to present habitat) was made 1. Thus sl. no. 10 includes sl. no. 13. and sl. no. 10 increased from 2780 to 2813.

3. (a) In the set of trait numbers 14, 15, 16 & 17 (distribution: local-national), sl. no. 16, 15 & 14 were made 0 if sl. no. 17 was 1. Again sl. no. 15 & 14 were made 0 if sl. no. 16 was 1. Again sl. no. 14 was made 0 when sl. no. 15 was 1. After all these replacements in this set, the counts are as follows:

sl. no. 14 = 915
sl. no. 15 = 1917
sl. no. 16 = 830
sl. no. 17 = 796

177 communities lack data on distribution (this is not filled in).

(b) Sl. no. 32 (island) was made zero for one community in Manipur.

4. The total number of combinations sl. no. 87 & 88 were 61.

(a) Either sl. no. 87 (occasional non-veg.) = 1 or sl. no. 88 (reg. non-veg) = 1, a new sl. no. was created, i.e., sl. no. 777 (non-veg). The total no of sl. no. 777 was 3970.

(b) If sl. no. 92 (non-veg beef, cow) = 1 and sl. no. 777 = 0, then sl. no. 777 was made 1. The number increased was 28, sl. no. 777 going up to 3998.

(c) If sl. no. 93 (non-veg beef, ox) = 1 and sl. no. 777 = 0, then sl. no. 777 was made 1. The total number updated to sl. no. 777 was 8, and the count increased to 4008.

(d) If sl. no. 94 (non-veg pork) = 1 and sl. no. 777 = 0, sl. no. 777 was made 1. With this total number of sl. no. 777 increased to 4018 by adding another 8.

(e) If sl. no. 94 (non-veg carrion) = 1 and 777 = 0, 777 was made 1. In this process sl. no. 777 increased by 1 and final count of non-vegetarians became 4019.

5. All communities thus reported as non-vegetarians (sl. no. 777) were compared with sl. nos. 77, 78, 79, 80, 81, 82 & 83 (which were reported as vegetarians of one or the other type) and the number of combinations with non-vegetarians (sl. no. 777) were found as follows :

sl. no. 777 with 77 = 182
78 = 107
79 = 138
80 = 121
81 = 35
82 = 37
83 = 36

Communities with such combinations were converted into files with codes for future reference and the file names are as follows :

File names

77-154.cmb
78-154.cmb
79-154.cmb
80-154.cmb
81-154.cmb
82-154.cmb
83-154.cmb

6. After creating the files, Sl. nos. 77, 78, 79, 80, 81, 82 & 83 were made 0, if sl. no. 777 was 1.

7. (a) If sl. no. 92 (beef of cow) = 1 and sl. no. 93 (beef of ox) = 0, sl. no. 93 was made 1 (if they eat cow why not ox?). After clubbing sl. no. 93 became 949. Thus now sl. no. 93 is no-vegetarian with beef inclusive of cow and beef and sl. no. 92 specifically points to beef of cow.

(b) If sl. no. 100 was 1 and sl. no. 102 was 0, sl. no. 102 was made 1, after clubbing sl. no. 102 became 688, i.e., now ragi includes nagli. sl. no. 100 is redundant.

8. (a) If sl. no. 125 (men take alcoholic drinks occasionally) = 1 or sl. no. 127 (men take alcoholic drinks regularly) = 1 a new sl. no. 778 was created, i.e., men take alcoholic drinks. Total no of sl. no. 778 updated is 3536.

(b) If sl. no. 126 (women take alcoholic drinks occasionally) = 1 or sl. no. 128 (women take alcoholic drinks regularly) = 1 a new sl. no. 779 is created, i.e., (women take alcoholic drinks). Total no of sl. no. 779 is 1263.

9. If sl. no. 79 = 1 and sl. no. 80 = 0 then clubbed with sl. no. 80 was made 1. Thus sl. no. 80 represents vegetarians with egg and sl. no. 79 is redundant.

Following are the counts of the combinations :

10. If sl. no. 90 = 1 and sl. no. 777 = 1
total no of combinations are 3339

11. If sl. no. 91 = 1 and sl. no. 777 = 1
total no of combinations are 73

12. If sl. no. 90 = 1 and sl. no. 91 = 1
total no of combinations are 26

13. If sl. no. 90 = 1 and sl. no. 777 = 0
total no of combinations are 10

14. If sl. no. 91 = 1 and sl. no. 777 = 0
total no of combinations are 2

15. The case of sl. no. 779 = 1 and 778 = 0
(women drink men do not) were 11.

If sl. no. 779=1 then 778 was made 1, consequently sl. no. 778 increased to 3547.

16. If sl. no. 78 (eat fish) = 1 and sl. no. 77 (pure veg.) = 1, then sl. no. 77 was made 0.

17. If sl. no. 80 (eat egg) = 1 and sl. no. 77 (pure veg.) = 1, then sl. no. 77 was made 0.

18. If sl. no. 91 (women cook non-veg. but not eat) = 1, and sl. no. 90 (women eat non-veg.) = 1, then sl. no. 90 was made 0.

19. If sl. no. 90 (women eat non-veg.) = 1 and 77 (pure veg.) = 1, then sl. no. 77 was made 0.

20. Sl. no. 174, 175 & 176 (self perception; high, middle & low) taken as a set, lack of data was noticed for 44 communities. Minor errors were corrected consulting the writeups.

21. If sl. no. 180, 181, 182 or 183 = 1 (Brahman, Kshatriya, Vaishya and Sudra), sl. no. 179 (recognize place in varna) was made 1 otherwise sl. no. 179 was made 0. In this process total no. of sl. no. 179 = 1 became 2757. Thus sl. no. 179 gives correct figure of how many communities recognize a place for themselves in varna system.

22. Sl. no. 184, 185 & 186 (other's perception; high, middle & low) taken as a set, it was observed that 55 communities lacked data. Minor errors were rectified after referring to writeups.

23. Sl. no. 194, 196, 197, 198 & 199 constitute a set giving information on the level of exogamy a community practice. Normally, exogamy cannot be at more than one level. It could be more than one if a community is heterogeneous or is in the process change in terms of rules of exogamy. Combinations in this set were checked for such cases. Then corrections were carried out for these combination categories recognizing the correct level of exogamy after consulting the writeups. However, 869 communities either lack data on exogamy or the rule of exogamy is not relevant to them.

24. If sl. no. 203 = 1 (FBD) or sl. no. 204 = 1 (MSD) then, sl. no. 202 was made 1, total no of sl. no. 202 increased to 548 which gives number of communities in which parallel cousin marriage is allowed.

25. In most of the cases where polygyny was reported (sl. no. 229 & 230), monogamy (sl. no. 226) was also reported. There were a few groups which reported only polygyny. These were checked with the writeups and it was found that monogamy is also permitted among them. Hence following corrections were made and monogamy increased from 4579 to 4610.

26. (a) If sl. no. 235=1, then sl. no. 208 was made 1, final total of sl. no. 208 increased to 2935. Thus sl. no. 208 now represents sororate junior and sl. no. 235 is redundant.

(b) If sl. no. 234 = 1, then sl. no. 209 was made 1, final total of sl. no. 209 increased to 300. Now sl. no. 209 represents senior sororate and sl. no. 234 is invalid.

(c) If sl. no. 233 = 1, then sl. no. 210 was made 1, final total sl. no. 210 increased to 1580. Thus sl. no. 210 gives the number of junior levirate and sl. no. 233 is invalid.

(d) If sl. no. 232 = 1, then sl. no. 211 was made 1, final total sl. no. 211 increased to 279 which gives the number of senior levirate and sl. no. 232 is invalid.

27. If sl. no. 245 (bride price in cash) = 1 and sl. no. 246 (bride price in kind) = 1, then sl. no. 247 (bride price in cash and kind) was made 1, total number of sl. no. 247 increased to 708. Again if sl. no. 247 (bride price in cash and kind) = 1, then sl. no. 245 and 246 were made 0, which decreased to 593 and 119, respectively.

28. If sl. no. 249 (dowry in cash) = 1 or sl. no. 250 (dowry in kind) = 1, then sl. no. 251 (dowry in cash and kind) was made 1, total no of sl. no. 251 increased to 1907. Again if sl. no. 251 = 1, then sl. no. 249 and 250 were made 0 which decreased to 169 and 560, respectively.

29. In serial numbers 351, 352 and 353 (status of women: equal, high and low), a few communities were shown as dual status for women. This was checked with the writeups and corrections were made in case of such combinations. Data are lacking for this trait on 38 communities.

30. Sl. no. 367 (female circumcision) was made 0 in all 4635 records total no of zeros replaced were 3. This trait was reported to exist among Daudi Bohra, a Muslim trading caste, but there is no clear confirmation. As such this trait stands deleted.

31. In the set of sl. no. 375, 376 and 377 (trait on marriage feast) corrections were made as follows :

If sl. no.	376 & 377 = 1	then	sl. no.	376	was made 0
	375 & 377 = 1	then		375	was made 0
	375 & 376 = 1	then		375	was made 0
	375, 376 & 377 = 1	then		375 & 376	was made 0

32. In the set sl. no. 400, 406 and 407 (mainly landowning, landholding and landless), 116 groups were reported to be mainly landowning and at the same time landless. This was checked with writeups and were found to be mainly landowning and hence correction was made to sl. no. 407 which was reduced by 116. There are 508 groups which have no data on land or it is not applicable to them, 1795 groups are totally landless, 362 are both landholding and landless, another 497 fall between mainly landowning to landholding categories.

33. Sl. no. 409, 451 and 493 (fishing; C, T & NAQ) were made 0 for the states of Manipur, Meghalaya, Nagaland, Arunachal Pradesh and Mizoram and files were created for reference to deletion are as follows :

409-code.fil	86 records
451-code.fil	104
493-code.fil	8

Fishing in these states is a past-time occupation of many tribes. This correction was suggested in Calcutta workshop.

34. In the set sl. no. 552, 553 and 554 (payment in kind, cash, and both) corrections are made as follows :

If sl. no.	553 & 554 = 1	then	sl. no.	553	was made 0	
"	552 & 554 = 1	"	"	552	was made 0	
"	552 & 553 = 1	"	"	552 & 553	were made 0	554 was made 1
"	552, 553 & 554 = 1	"	"	552 & 553	were made 0	

35. In the set sl. no. 635, 636, 637 and 638 (folk song sung by community, men, women and both, corrections are made as follows :

If sl. no.	638 = 1	then	sl. no.	made 0	635 was made 1
	637 = 1	then			635 "
	637 & 638 = 1			637 "	635 "
	636 & 637 = 1			636 & 637 "	635 "
	635, 637 & 638 = 1			637 "	
	635, 636 & 638 = 1			636 "	
	635, 636 & 637 = 1			636 & 637 "	638 "
	635, 636, 637 & 638 = 1			636 & 637 "	

In this set data are lacking on 937 groups or they do not have folksongs.

36. In the set of sl. no. 648, 649 and 650 (dancing : men, women and both) corrections are made as follows :

If sl. no.	649 & 650 = 1	then	sl. no.	649 made 0	
	648 & 650 = 1			648 "	
	648 & 649 = 1			648 & 649 "	650 made 1
	648,649 & 650 = 1			648 & 649 "	

There are 2769 groups which do not have the trait of dancing or there could also be some lack of data.

37. In the set sl. no. 682 to 685 (education favourable for boys, girls, partly for boys, girls), minor corrections were made for those groups which showed more than one trend after consulting the writeup.

MULTIVARIATE ANALYSIS OF THE DATA ON TRAITS: WHEN WILL A TRAIT BE SEEN?

As a case study, the investigation for the trait of desired number of offspring (1-2, 3 and 4 or more) is described. The objective here is to identify the set of traits associated with the preference for a small family (and also those which go together with a large family) along with some measure of the relative magnitudes of their influences. Primarily, the analysis is confined to 1-2 versus 4 or more. However, dichotomies like 1-2 and 3 versus 4 or 1-2 versus 3 and above are also considered. The more elaborate logistic regression using the three as multiple response categories may also be attempted in future.

Association between traits

For a pair of traits, a measure of association is to be computed, based on their co-occurrence (or avoidance of occurring) in the same community. These may be computed for all-India, as well as for states/UTs, or zones separately. These measures could be used for carrying out clustering of traits by a variety of algorithms.

For the analysis which follows, Pearson's product-moment correlation coefficient has been used as a primary measure of association, and statistical significance has been tested using the Bonferroni criterion since multiple comparisons are involved.

Only those traits which are shown by at least 30 communities have been included in the analysis. The number of traits comes down to about 700 as a result. This cut-off is arbitrary, and may be replaced by other criteria.

The Goodman-Kruskal index, based on the reduction in the number of erroneous prediction of one trait, based on the knowledge of the presence or absence of another trait, has also been used. In general, association is considered worthy of further consideration only if it is high on both these counts.

Other possible measures may include :

(i) the chi-square statistic of the 2X2 contingency table,

(ii) the difference in the proportion of say trait i, between two groups, one with trait k and the other without,

(iii) log-odds ratio etc.

Short-listing of traits

The traits which showed a significant correlation at 0.05 level, and a non-zero association by Goodman-Kruskal index have been identified; this number comes to about a hundred. For further multivariate analysis, only these traits have been included. Described below are some attempts at the multivariate statistical analysis. Most of the analysis has been carried out only for the south zone due to a higher homogeneity, distinctness and stability of culture.

(i) **The chi-square criterion :**

Identify that trait which has the largest value of chi-square for the 2 x 2 contingency table (2 vs 4 family size, presence/absence of the trait). This turns out to be 'Family planning favoured'.

Next, 2 x 4 contingency tables are considered, with Family Planning Favoured as one of the traits, and each of the other traits one by one. Here, chi square is maximum when the next trait to be included is 'Use Modern methods of family planning'.

In an analogous manner, examination if 2X8 tables leads to 'Savings favoured' and 2X16 tables yield 'Community has teachers'. One can continue in this manner to add more traits.

However, this may not be the best method because the contribution to the chi square value is very unequal for the different cells. Secondly, it is not easy to judge the relative contributions of the traits. Thirdly, the highest and the next highest may be quite close, so the choice of the 'best' may not necessarily be the most appropriate. Fourthly, this does not consider all possible triplets, say, since the first trait used is 'frozen'.

(ii) **Nested analysis using Pearson's r :**

In this approach, the trait with a highest correlation with a small family size is identified, which turns out to be 'family planning favoured (r=0.585). Next, only amongst those communities which show this trait, the trait with highest correlation is identified, which is 'annaprashana' (r=0.2961). One can continue in this manner to find a set of traits in a hierarchical manner.

The disadvantage is that the number of communities in the set at each subsequent stage becomes smaller. The advantage is that the traits whose influence is due to their being associated with the first trait are automatically eliminated.

(iii)**Goodman-Kruskal's predictability index :**

In the south zone, 251 communities prefer 2 children, while 160 prefer 4 or more children. In the absence of any other information, by predicting that all the communities prefer two children, there will be 251 correct and 160 wrong predictions, thus 0.389 being the proportion of errors in the prediction. The trait with highest predictability for a small family size is 'family planning favoured'; knowing the presence or absence of this trait reduces the number of errors to 81. The next trait whose knowledge leads to a maximum reduction in the number of errors is 'scheduled castes', whereby 74 errors remain. The next trait 'child labour" reduces six more errors and so on. With the knowledge of 15 traits, a perfect prediction can be made.

(iv) **Multiple regression on log-likelihood ratios :**

If f2 and f4 are the proportions of communities showing preference for 2 and 4 children, one can write down the regression equation for predicting the proportions of such communities in the presence and absence of a trait as

$$\ln (f2/f4) = A + B.X$$

where A and B are constants, and X=0 or 1, depending whether a trait is present or absent. For two or more traits, this equation becomes

$$\ln\ (f2/f4) = A + B1.X1 + B2.X2 + \ldots\ldots + Bn.Xn$$

with n traits, there would be 2**n-1 classes, and the n+1 constants can be determined from the regression equation.

To begin with, by carrying out the regression analysis for all pairs of traits, the pair which shows the least mean square error is identified. At the next stage, one trait from the remaining set is added to these two, and the mean square error obtained for all such triplets. The trait which gives the smallest m.s.e. is retained for the next stage. At every stage, whether the regression coefficients are significantly different from zero is determined. The process is terminated when addition of one more trait leads to at least one regression coefficient not significantly different from zero.

The advantage of the method is the automatic termination, and the knowledge of the relative importance of the traits as seen by their regression coefficients. Thus, one set obtained from the analysis is :

Constant = 1.0472
Savings favoured, coefficient = 0.9028
Girls study upto post-graduate level = 0.5721
Trapping of birds and animals as a traditional occupation = -0.6509
Religion muslim = -0.6742
Nuptial at grooms residence = -0.7346
Labour as current occupation = -0.6161
Remarriage of widows permitted = -0.6648

The signs of the coefficients (+ve preferring a small family, -ve for a large family), at least for some of the traits are not inconsistent with what one expects.

The disadvantages are (a) the goodness of fit criterion rejects all such fits, (b) number of classes becomes large rather rapidly with the number of variables, so the number of communities in each class may be small (though this has been to some extent corrected for by using the weighted least square approach), and (c) as usual, the choice of subsequent traits is dictated by the earlier traits.

Two other techniques which may be used for subsequent analysis are : (i) Discriminant analysis, which gives weightages for different variables to optimally bring out the differences between two or more prespecified groups, and (ii) Canonical correlations, which may be used to correlate two groups of traits (or perhaps communities).

(v) **Selecting traits based on correlations in different subsets:**

An alternative way of selecting important traits correlated with a particular trait is to look for correlations in various subsets. Thus, within the south zone, correlations have been calculated for 2 vs 4, 2 vs 3&4 and 2&3 vs 4, as different ways of classifying small and large family size preferences. Those traits which show a significant positive correlation in all the three categories may be regarded as the most important, and the index of importance may be the average correlation coefficient. Next one can use those which are significantly positive correlation in at least two groups, etc. In the south zone, this leads to

Savings favoured
Community has scholars
Education for girls is favoured
Community has Engineers/doctors
Annaprashan ceremony
Education for boys is favoured
Kanyadan exists
Girls study upto college level

as traits significantly positive in all three classifications, and

Child labour
Self perception : low
Landless community
Remarriage : widow

as traits significantly negatively correlated in all the three.

A manuscript discussing the above results, and dealing mainly with the methodological issues in the analysis of this data, is currently under preparation.

During the year 1993-94, computerization of district-wise population figures from 1931 Census was taken up mainly for two reasons:

1. For district-wise analysis of POI data, an estimate of population of different communities in various districts was essential. It was also necessary to have complete data on district-wise distribution of communities for taking analysis down to district level.

2. In addition to building up data on district-wise distribution of communities, computerization of 1931 Census gave a chance make comparative study of communities covered in POI project and those mentioned in the 1931 Census.

COMPUTERIZATION OF THE 1931 CENSUS DATA

The above work involved feeding of 31752 entries from 1931 Census. After the feeding was over, equivalence between community names which occurred in 1931 and in POI project was established. Further, equivalence between the districts of 1931 and present day districts was also established.

Details of computerization work on various provinces/states of 1931 Census is given below :

Slno.	Province/ State	No. of entries
1	Ajmer State	243
2	Andaman & Nicobar	104
3	Assam Province	1055
4	Baroda State	1376
5	Central Provinces & Berar	3401
6	Bihar & Orissa	1116
7	Bombay Province	4102
8	Calcutta Residency	514
9	Central India Agency	4276
10	Cochin State	128
11	Coorg State	47
12	Delhi Residency	143
13	Gwalior State	2346
14	Dominion of H.E.H. Nizam	801
15	Jammu & Kashmir State	1282
16	Mayurbhanj State	526
17	Punjab Province	6209
18	Rajputana Agency	578
19	Travancore State	875
20	Western India Agency	2630
	Total	31752

A preliminary analysis of 1931 Census and POI data is reported in the following :

Among 2753 unique communities:

		Unique Communities	
I	Population /distribution available only in 1981...	281	(144 only in 1981 137 in 1981 and also in gazetteers)
II	Population /distribution available only in 1931...	582	(318 only in 1931 264 in 1931 and also in gazetteers)
III	Population /distribution available both in 1981 and 1931	376	(158 in 1931 & 1981 218 in 1931, 1981 & also in gazetteers)
IV	Distribution available only in gazetteers and monographs	224	
V	Nothing	1290	
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Further, within these 1779, the breakup is as follows:

Subgroups	427
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For the above 614, it is unlikely that population figures are available. We will then be left with 1165 elements of 4635 or 974 unique of the same (around 25%). These communities are a mixed lot as follows.

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Communities like Bahai, Bengali, Irani, Indo-Vietnamese, Ex-servicemen, Iraqi, Srilankan repatriates, etc.

III. New communities:

Bishnupriya-Manipuri, Shia Imami Islami, Desh Bhandari, Rama Kshatriya, Quam-E-Punjabian, Parkavakulam, etc.

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