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A Social Mobility Study on the Basis of National Industrial Classification for the State of West Bengal

Introduction

THE most appropriate way of quantifying the characteristics of a human population is by classifying their members on the basis of some personal attribute. Thus while studying the dynamics of social processes, it is natural to start by looking at the movement of the people across social, economic or occupational categories. Movements of this type constitute what is called mobility. Social mobility can be defined in terms of changes over generation. As a result of such changes, the distribution of the total population among the constituent classes changes from one generation to another.

The present study has been done on the basis of the data collected through the Family Budget Enquiry, 1981-82 by the Bureau of Applied Economics and Statistics, Government of West Bengal. Values of the different measures of social mobility developed by Mukherjee and Basu (1979), Mukherjee and Chattopadhyay (1986) and Chattopadhyay (1987) have been compared for the different districts of West Bengal.

Sample Design

The study has been made for 25 centres taken from different districts of West Bengal. For the present analysis only 16 centres are considered by taking one centre from each district. In all centres except two, 250 municipal holdings were selected systematically with a random start from the registers of such holdings.

Every selected holding was then visited and the family/families residing in the same was/were counted. If there was only one family, the same was surveyed. But in cases of more than one families, the families were listed and assigned serial numbers; then only one of the families from those listed was selected at random and surveyed. In case of holdings with no family, further samples of holdings were selected on circular systematic basis till the number of selected families reaches 250.

Departures from the method just stated were made in respect of two centres, viz. Ho wrah and Calcutta. The number of holdings selected was 500 (instead of 250) in case of Howrah, while in respect of Calcutta, a two stage sampling procedure with Census Blocks and families as the first stage and the second-stage sampling units respectively, was followed. 100 Census

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Blocks were selected systematically with a random start. Then from every selected census block 30 families were selected systematically with a random start.

National Industrial Classification (NIC) **India, 1970**

According to the above classification members of each selected family were allotted to 10 different divisions as given below:

Division - 0	Agriculture, Hunting, Forestry and Fishing
Division - 1	Mining and Quarrying
Division - 2 and 3	Manufacturing
Division - 4	Electricity
Division - 5	Construction
Division - 6	Wholesale and Retail Trade and Restaurants and Hotels
Division - 7	Transport Storage and Communication
Division - 8	Financing, Insurance, Real Estate and Business Service
Division - 9	Community, Social and Personal Services

The divisions 4, 5 and 6 have coalesced since the numbers of members belonging to these classes were very small and it was difficult to go into further analysis. Thus, for the present study eight classes have been taken into account, viz. 1 (Div - 0), 2 (Div - 1), 3 (Div - 2), 4 (Div - 3), 5 (Div - 4, 5, 6), 6 (Div - 7), 7 (Div - 8) and 8 (Div - 9).

Measurement of Social Mobility

Let $p_{1j}^{(t)}$ be the probability of transition from the ith class at time t to the jth class at time $t+1$. Obviously if there are k classes then $\sum_{j=1}^{k} p_{ij}^{(t)} = 1$. Also let $\pi_i^{(t)}$ $(i = 1, 2 \ldots k)$ denote the proportion of the total population at time t belonging to class i. Then the nature of change is reflected by the equation

$$\pi^{(t+1)} = P^{(t)} \pi^{(t)} \tag{1}$$

Where $P^{(t)}$ is the matrix whose elements are $P_{ij}^{(t)}$ and $\pi^{(t)}$ is the $k \times 1$ vector with elements $\pi_i^{(t)}$ giving the population distribution at time t. Since in the long run the transition probability matrix $P^{(t)}$ will have no effect of time the following revised equation can also be used for analysis

$$\pi^{(t)} = (P)^{(t)} \pi^{(0)} \tag{2}$$

where $\pi^{(0)}$ gives the initial population distribution. Most of the measures are based on $P^{(t)}$ or P, $\pi^{(t)}$ and $\pi^{(t+1)}$ for studying the trends of two successive generations. To facilitate the interpretation of an observed value of any measure of social mobility Mukherjee and Basu (1979) and Mukherjee and Chattopadhyay (1986) extended the notions of a perfectly mobile

society (where son's occupation is independent of his father's), a perfectly immobile society (where a son has the same occupation as that of his father) and a society showing extreme movement (where a son can have any occupation except that of his father) by means of following transition probability matrices respectively.

Perfect Mobility

$$P = P_1 \text{ say } = \begin{pmatrix} r_1 & r_2 & \dots & r_k \\ r_1 & r_2 & \dots & r_k \\ r_1 & r_2 & \dots & r_k \end{pmatrix}^{k \times k} \tag{3}$$

$$\Sigma r_i = 1$$

In particular one can take

$$r_i = \frac{1}{k} \text{ for every } i \tag{4}$$

Perfect Immobility

$$P = P_2 \text{ (say) } = \begin{pmatrix} 1 & 0 & \dots & 0 \\ 0 & 1 & \dots & 0 \\ \dots & \dots & \dots & \dots \\ 0 & 0 & \dots & 1 \end{pmatrix}^{k \times k} \tag{5}$$

Extreme Movement

and
$$P = P_3 \text{ (say)} = \begin{pmatrix} 0 & p_{12} & \dots & p_{1k} \\ p_{21} & 0 & \dots & p_{2k} \\ \dots & \dots & \dots & \dots \\ p_{k1} & p_{k2} & \dots & 0 \end{pmatrix}^{k \times k} \tag{6}$$

$$\sum_{j \neq i} p_{ij} = 1$$

In particular one can take

$$p_{ij} = \frac{1}{k-1} \text{ for every } i \neq j \tag{7}$$

Here following measures of social mobility have been considered for comparing social mobility condition of different districts of West Bengal.

A measure of divergence between $\pi^{(t)}$ and $\pi^{(t+1)}$ as suggested by Mukherjee and Basu (1979) is Δ^2. Where

$$\cos \Delta = \Sigma \sqrt{(\pi_i^{(t)} \ \pi_i^{(t+1)})} \tag{8}$$

Another measure suggested by the same authors is

$$\text{Tr } P \text{ or } \text{Tr } P^{(t)} \tag{9}$$

Where $\text{Tr } P = \Sigma P_{ii}$

Another four measures used are developed by Mukherjee and Chattopadhyay. These are as follows.

This measure is based on the idea of minimum discrimination information statistic.

$$J(1,2) = \Sigma \left((\pi_i^{(t)} - \pi_i^{(t+1)}) \ln (\pi_i^{(t)}/\pi_i^{(t+1)})\right) \tag{10}$$

Both M_1 and M_2 are based on the idea of distance.

$$M_1 = \Sigma (\pi_i^{(t)} - \pi_i^{(t+1)})^2 \tag{11}$$

$$M_2 = \Sigma ((\pi_i^{(t)} - \pi_i^{(t+1)})^2/\pi_i^{(t)}) \tag{12}$$

The measure E is based on the idea of entropy.

$$E = | \Sigma (\pi_i^{(t+1)} \ln \pi_i^{(t+1)} - \pi_i^{(t)} \ln \pi_i^{(t)}) | \tag{13}$$

Except the measure Tr P given by (9) all other measures have value zero under perfect immobility given by (5). In the two other situations specified by (3) and (6), their values depends on the specific values of $\pi_i^{(t)}$.

Under perfect mobility, perfect immobility and extreme movement the values of Tr P are 1, K and 0 respectively when there are k classes.

Data Analysis

For analysis it is assumed that the population is closed i.e. the occupational classes considered are the only possible classes and there is no migration. For each family, among the older generations the person having better occupational status (in terms of remuneration) has been considered as the representative. For the younger generation also, that particular offspring having the best occupational status in the family is considered as representative of the younger generation.

The estimates of the measures given by the equations (8)-(13) can be obtained by replacing the different probabilities by the corresponding sample estimates. If we denote by $n_i^{(t)}$ the number of persons belonging to the ith class out of N persons and by $n_{ij}^{(t)}$ the number of (father-son) pairs belonging to the ith class at time t and to the jth class at time $t+1$ then the Maximum likelihood estimates of $\pi_i^{(t)}$ and $p_{ij}^{(t)}$ are given by

$$\hat{\pi}_i^{(t)} = n_i^{(t)}/N \quad \text{and} \quad \hat{p}_{ij}^{(t)} = n_{ij}^{(t)}/n_{i0}^{(t)} \quad \text{where} \quad n_{i0}^{(t)} = \sum_j n_{ij}^{(t)}$$

Tables 1-16 give the proportion of (father-son) pairs belonging to various classes over two successive generations.

Table 17 gives the same values for the state of West Bengal (by taking into account all the 25 centres). So, these figures can be used to estimate the transition probabilities and hence the measure given by (9). Table 18 gives the proportion of persons in older and younger generation belonging to the different classes in all the districts as well as in West Bengal. These values can be used to estimate the measures given by (8) and (10) to (13). Table 19 gives the values of the different measures.

TABLES 1-17 : PROPORTION OF PAIRS BELONGING TO VARIOUS CLASSES OVER TWO SUCCESSIVE GENERATIONS

TABLE 1 : DISTRICT: CALCUTTA

Younger Generat / Older Generat	1	2	3	4	5	6	7	8
1	.4407	.0508	.3051	.0679	—	.0678	.0508	.0169
2	.1136	.4546	.0909	.0909	—	.1136	.0455	.0909
3	.1333	.0286	.4190	.1810	.0667	.0571	.1048	.0095
4	.0440	.0220	.0714	.6758	.0275	.0824	.0604	.0165
5	.0540	—	.0811	.1892	.3784	.1081	.1081	.0811
6	.0463	.0092	.0833	.1667	.0093	.5741	.0833	.0278
7	.0362	—	.0843	.1084	.0602	.1205	.5663	.0241
8	.0848	—	.0339	.1017	.0847	.1017	.1525	.4407

TABLE 2 : DISTRICT : 24 PARGANAS

Younger Generat / Older Generat	1	2	3	4	5	6	7	8
1	—	0.33333	.33333	—	—	0.33333		—
2	—	—	—	—	—	—	1	—
3	0.11111	—	0.55555	—	0.11111	0.11111	—	.11111
4	0.03448	—	0.20690	.65517	0.03448	0.03448	.3448	—
5	—	_	_	—	.5	0.5	—	—
6	.07692	—	.07692	.15385	—	0.53846	.15385	—
7	—	—	.28571	—	—	0.14286	.57143	—
8	0.33333	—	.33333	—	—	—	—	.33333

TABLE 3 : DISTRICT : NADIA

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	.4286	.1429	.1429	.1428	—	—	.1428	—
2	—	—	—	1.0000	—	—	—	—
3	.3000	.1000	.2000	.1000	.1000	.1000	.1000	—
4	.1667	.1111	—	.6667	.0555	—	—	—
5	—	—	—	.1429	.5714	.1428	.1429	—
6	—	—	—	—	.1667	.8333	—	—
7	—	—	—	.3333	—	.3333	.3334	—
8	.2500	—	—	—	.2500	—	—	.5000

TABLE 4 : DISTRICT : MURSHIDABAD

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	1.0000	—	—	—	—	—	—	—
2	—	.5714	—	.4286	—	—	—	—
3	.1250	—	.5000	.1250	—	.2500	—	—
4	.1667	—	.1667	.3333	.1667	—	.1666	—
5	.3333	—	.3333	—	—	—	.3334	—
6	—	.5000	—	—	—	.5000	—	—
7	—	—	—	—	—	.3333	.6667	—
8	—	—	—	—	—	.5000	—	.5000

TABLE 5 : DISTRICT : MIDNAPORE

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	.5000		.5000	—	—	—	—	—
2	—	.3333	.6667	—	—	—	—	—
3	—	—	.5455	.1818	.1818	.0909	—	—
4	.1000	—	.3000	.5000	—	—	.1000	—
5	—	.1667	—	.3333	.3333	—	—	.1667
6	—	—	—	.2500	—	.7500	—	—
7	—	—	—	.5000	—		.5000	—
8	—	.1428	—	.2857	.1429	.2857	—	.1429

TABLE 6 : DISTRICT: HOWRAH

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	.5000	—	.1667	.1667	—	—	.1666	—
2	.1333	.5333	.2667	—	—	.0667	—	—
3	.1333	—	.4667	.2000	.1333	.0667	—	—
4	.0500	.0500	.2000	.6500	—	—	—	.0500
5	—	.3333	—	—	.3334	—	—	.3333
6	.0556	—	.3889	.1111	—	.3333	.1111	—
7	—	—	.1428	—	—	.1429	.7143	—
8	.2000	—	—	—	—	.2000	.2000	.4000

TABLE 7 : DISTRICT : BANKURA

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	.5000	—	—	—	—	—	.5000	—
2	.2500	.7500	—	—	—	—	—	—
3	—	—	1.0000	—	—	—	—	—
4	.1053	.0526	.0526	.7895	—	—	—	—
5	—	—	—	—	.6667	.3333	—	—
6	—	—	.1667	.1666		.6667	—	—
7	—	—	.1667	.1666	.1667	.1667	.3333	—
8	—	—	—	.5000	—	—	—	.5000

TABLE 8 : DISTRICT : PURULLA

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	.4445	—	.2223	.3333	—	—	—	—
2	—	.7500	.2500	—	—	—	—	—
3	.1818	.0909	.4546	—	.1818	.0909	—	—
4	.0556	—	—	.8333	.0556	—	.0555	—
5	.1429	—	—	.2857	.2857	—	.2857	—
6	—	—	—	—	—	.5556	.2222	.2222
7	—	—	—	.1000	—	—	.7000	.2000
8	—	—	—	—	—	—	—	1.0000

TABLE 9 : DISTRICT: HOOGHLY

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	.5000	—	—	—	—	—	.5000	—
2	—	.5000	—	—	—	—	.5000	—
3	.1111	—	.5556	—	.2222	—	—	.1111
4	—	—	.2308	.4615	—	.1539	.0769	.0769
5	—	—	—	.0667	.0667	.0666	—	—
6	—	—	.5000	—	—	.3333	.1667	—
7	.3333	—	.3333	—	—	—	.3334	—
8	.2000	—	—	—	.2000	.2000	—	.4000

TABLE 10 : DISTRICT : BURDWAN

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	.5000	—	.2500	.2500	—	—	—	—
2	.1000	.4000	.2000	.2000	—	.1000	—	—
3	.2000	—	.4000	.4000	—	—	—	—
4	—	—	.0370	.7408	.0370	.0741	.1111	—
5	—	—	—	.4000	.4000	.2000	—	—
6	—	—	.2143	.2857	—	.5000	—	—
7	—	.2000	—	.2000	.2000	—	.4000	—
8	—	—	—	—	—	—	—	1.0000

TABLE 11 : DISTRICT : BIRBHUM

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	—	—	1.0000	—	—	—	—	—
2	—	.4000	.2000	—	.4000	—	—	—
3	—	.0833	.5000	.2500	.0833	.0834	—	—
4	.1667	—	—	.6667	—	.1666	—	—
5	.0833	—	.0833	.1667	.5000	—	.0833	.0834
6	—	—	—	—	.2500	.7500	—	—
7	—	—	—	—	1.0000	—	—	—
8	—	—	.5000	—	—	—	—	.5000

TABLE 12 : DISTRICT: COOCHBEHAR

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	0.3000	—	0.3000	0.2000	—	—	0.1000	0.1000
2	—	0.5000	—	0.5000	—	—	—	—
3	0.2222	—	0.5556	0.2222	—	—	—	—
4	0.1200	—	0.0800	0.7200	0.0400	0.0400	—	—
5	—	0.2000	0.4000	0.2000	—	—	—	—
6	—	—	0.3334	—	—	0.3333	0.3333	—
7	—	—	—	1.0000	—	—	—	—
8	0.3333	—	0.3334	—	0.3333	—	—	—

TABLE 13 : DISTRICT : MALDA

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	0.3000	—	0.3000	0.2000	—	—	0.1000	0.1000
2	—	0.5000	—	0.5000	—	—	—	—
3	0.2222	—	0.5556	0.2222	—	—	—	—
4	0.1200	—	0.0800	0.7200	0.0400	0.0400	—	—
5	—	0.2000	0.4000	0.2000	—	—	—	—
6	—	—	0.3334	—	—	0.3333	0.3333	0.3333
7	—	—	—	1.0000	—	—	—	—
8	0.3333	—	0.3334	—	0.3333	—	—	—

TABLE 14 : DISTRICT : JALPAIGURI

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	0.5000	—	0.5000	—	—	—	—	—
2	0.2500	0.5000	0.2500	—	—	—	—	—
3	0.1429	—	0.7142	0.1429	—	—	—	—
4	0.0769	0.0769	0.3077	0.3847	—	0.0769	—	0.0769
5	—	—	0.2500	—	0.2500	0.2500	—	—
6	—	—	—	—	—	1.0000	—	—
7	—	—	—	—	1.0000	—	—	—
8	—	0.5000	—	—	—	—	0.5000	—

TABLE 15 : DISTRICT: DARJEELING

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	0.5741		0.2857	—	—	—	—	0.1429
2	—	0.2500	0.5000	0.2500	—	—	—	—
3	—	—	0.4445	0.2222	0.1111	0.1111	0.1111	—
4	—	—	0.1579	0.6843	0.0526	—	0.0526	0.0526
5	—	—	0.2500	0.2500	0.5000	—	—	—
6	—	—	—	—	0.5000	0.5000	—	—
7	—	—	—	0.5000	0.5000	—	—	—
8	—	—	—	—	—	—	0.3333	0.6667

TABLE 16 : DISTRICT : BALURGHAT

Younge Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	0.4546	0.0909	0.1818	0.0909	0.0909	0.0909	—	—
2	—	0.6666	0.1667	0.1667	—	—	—	—
3	0.2222	—	0.3334	0.2222	0.1111	—	0.1111	—
4	0.1000	0.0500	—	0.7500	—	—	0.0500	0.0500
5	0.1538	0.0769	0.0769	0.1538	0.3847	—	—	0.0769
6	—	—	—	—	1.0000	—	—	—
7	0.1667	—	—	0.1667	—	0.1666	0.5000	—
8	—	—	—	—	0.3333	—	0.3333	0.3334

TABLE 17 : WEST BENGAL

Younger Generation/ Older Generation	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1	.4483	.0689	.2299	.1034	.0230	.0345	.0690	.0230
2	.0625	.4750	.1875	.1375	.0250	.0750	.0250	.0125
3	.1214	.0214	.4643	.1929	.0929	.0714	.0214	.0143
4	.0808	.0269	.1115	.6615	.0269	.0346	.0385	.0193
5	.0682	.0682	.1136	.1704	.3864	.0682	.0568	.0682
6	.0206	.0103	.1650	.1340	.0515	.5052	.0928	.0206
7	.0339	.0169	.0848	.1525	.0848	.1017	.4915	.0339
8	.1176	.0392	.0784	.0588	.1177	.1177	.0784	.3922

TABLE 18: PROPORTION OF PERSONS IN TWO SUCCESSIVE GENERATIONS FOR DIFFERENT DISTRICTS AND WEST BENGAL

	Mwshidabad			*24-Parganas*	
Class	*O.G.*	*Y.G.*	*Class*	*O.G.*	*Y.G.*
1	0.09286	0.14815	1	0.06468	0.07339
2	0.12857	0.07407	2	0.03484	0.00917
3	0.19286	0.27160	3	0.15920	0.21101
4	0.28571	0.18519	4	0.27363	0.28440
5	0.11429	0.06173	5	0.06966	0.06422
6	0.05714	0.14815	6	0.21393	0.17432
7	0.05000	0.07407	7	0.13930	0.15596
8	0.07857	0.03704	8	0.04477	0.02752
	Nadia			*Calcutta*	
Class	*O.G.*	*Y.G.*	*Class*	*O.G.*	*Y.G.*
1	0.21531	0.16832	1	0.09629	0.10316
2	0.05263	0.08911	2	0.08568	0.06211
3	0.20574	0.11881	3	0.15586	0.18105
4	0.24402	0.33663	4	0.25336	0.25052
5	0.11962	0.12872	5	0.05385	0.06526
6	0.03349	0.02970	6	0.14688	0.16316
7	0.06220	0.06931	7	0.11465	0.12000
8	0.06699	0.05940	8	0.09343	0.05474
	Howrah			*Coochbehar*	
Class	*O.G.*	*Y.G.*	*Class*	*O.G.*	*Y.G.*
1	0.09562	0.09827	1	0.11224	0.16346
2	0.12350	0.09249	2	0.05612	0.09615
3	0.19123	0.28902	3	0.15306	0.25000
4	0.20319	0.19075	4	0.38776	0.29808
5	0.03586	0.04624	5	0.08674	0.04807
6	0.18725	0.16763	6	0.07143	0.06731
7	0.08765	0.08670	7	0.07653	0.04808
8	0.07570	0.02890	8	0.05612	0.02885

Table 18 *(conid. on* p. 214)

Table 18 *(contd.from* p. 213)

Nadia			Jalpaiguri		
Class	O.G.	Y.G.	Class	O.G.	Y.G.
1	0.11616	0.15966	1	0.18841	0.21176
2	0.11616	0.10924	2	0.07971	0.07971
3	0.23232	0.17647	3	0.23188	0.36295
4	0.20707	0.26891	4	0.30435	0.16471
5	0.09597	0.08404	5	0.07246	0.03529
6	0.12626	0.13445	6	0.05797	0.04706
7	0.02525	0.02521	7	0.02899	0.04706
8	0.08081	0.04202	8	0.03623	0.03529

Midnapur			Purulia		
Class	O.G.	Y.G.	Class	O.G.	Y.G.
1	0.10500	0.08046	1	0.12755	0.15686
2	0.04500	0.06896	2	0.06633	0.04902
3	0.28500	0.32184	3	0.12245	0.14706
4	0.32500	0.27596	4	0.25510	0.27451
5	0.07500	0.08046	5	0.15816	0.07843
6	0.07000	0.10345	6	0.10204	0.07843
7	0.04500	0.04598	7	0.11735	0.13726
8	0.05000	0.02299	8	0.05102	0.07843

Bankura			Birbhum		
Class	O.G.	Y.G.	Class	O.G.	Y.G.
1	0.10870	0.08333	1	0.11735	0.06250
2	0.07246	0.09722	2	0.09184	0.06250
3	0.10870	0.13889	3	0.26530	0.29688
4	0.36956	0.37500	4	0.23979	0.23438
5	0.08695	0.09723	5	0.13265	0.17187
6	0.10145	0.12500	6	0.04592	0.10937
7	0.08696	0.06944	7	0.04082	0.03125
8	0.08696	0.06944	8	0.04082	0.03125

	Burdwan			*Hooghly*	
Class	*O.G.*	*Y.G.*	*Class*	*O.G.*	*Y.G.*
1	0.08295	0.05660	1	0.08197	0.11000
2	0.14747	0.06604	2	0.04918	0.04000
3	0.14286	0.15095	3	0.24044	0.36000
4	0.23042	0.38680	4	0.17486	0.10000
5	0.06451	0.05660	5	0.06011	0.06000
6	0.20737	0.21698	6	0.21311	0.16000
7	0.09677	0.05660	7	0.10383	0.11000
8	0.02765	0.00943	8	0.07650	0.06000

	Darjeeling			*Kalurghal*	
Class	*O.G.*	*Y.G.*	*Class*	*O.G.*	*Y.G.*
1	0.11565	0.11539	1	0.21531	0.16836
2	0.07483	0.03846	2	0.05263	0.08911
3	0.15646	0.21795	3	0.20574	0.11881
4	0.32653	0.34616	4	0.24402	0.33663
5	0.14285	0.12820	5	0.11962	0.12872
6	0.04082	0.02564	6	0.03349	0.02970
7	0.02721	0.07692	7	0.06220	0.06931
8	0.11565	0.05128	8	0.06699	0.05941

	West Bengal	
Class	*O.G.*	*Y.G.*
1	0.11650	0.12030
2	0.07940	0.07410
3	0.19550	0.22910
4	0.27000	0.26380
5	0.09214	0.07950
6	0.11320	0.11960
7	0.07080	0.07550
8	0.06220	0.03810

O.G. = Older Generation Y.G. = Younger Generation

TABLE 19 : VALUES OF THE DIFFERENT MEASURES

	A2	E	mi	J (1, 2)	mi	TrP
Calcutta	.009145	.031807	.003166	.036694	.031571	3.9496
24-Parganas	.017008	.080209	.005708	.069186	.0537559	3.1539
Murshidabad	.071274	.009199	.035681	.286197	.326203	4.0714
Nadia	.027730	.020679	.019877	.111111	.110211	3.5334
Coochbehar	.041531	.016324	.024731	.166397	.175369	2.4089
Malda	.018264	.049732	.010598	.073243	.069231	2.4089
Darjeeling	.039190	.074605	.012549	.158388	.176814	3.6169
Balurghat	.027720	.020658	.019878	.111115	.110214	3.4227
Jalpaiguri	.046016	.040382	.037215	.184553	.171176	3.3489
Burdwan	.049610	.237848	.033946	.199555	.190020	4.3408
Hooghly	.029909	.0878401	.023900	.119820	.119960	3.1505
Howrah	.024823	.085807	.013370	.100100	.092632	3.9310
Purulia	.023453	.029380	.010203	.094270	.081435	5.0237
Bankura	.026840	.068628	.005800	.110893	.073457	5.2062
Midnapur	.015870	.004180	.006827	.063750	.061679	3.6050
Birbhum	.035659	.076655	.011782	.143704	.158956	3.3167
West Bengal	.005078	.039553	.002020	.020367	.018207	3.8244

Interpretation

The first five columns of Table 19 give values of the measures given by (8) and (10) to (13). The values of all these measures under perfect immobility (as defined by (5)) is zero. Since all the observed values are very close to zero except in one or two situations, the different districts and also West-Bengal can be considered to be immobile.

The last column of Table 19 gives the values of the measure Tr $P^{(l)}$ as defined by (9). Value of this measure is 1 under perfect mobility (as defined by 3), 8 under perfect immobility (as defined by 5) and zero under extreme movement (as defined by 6). Here most of the values lie in the interval 3 to 5. So, this measure does not reflect the nature that the society is immobile like all other measures. But this variation may be due to small sample size. It can be seen from the Tables 1-17 that the values in many diagonal positions are negligible.

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References

Bartholonew, D. J., 1982, *Stochastic Models for Social Processes.* John Wiley & Sons. Chattopadhyay, A. K., 1987, Mobility Models and Related Statistical Inference Problems. *Unpublished thesis.* Mukherjee, S. P. and Basu, R., 1979, Measures of social and occupational mobility. *Demography India,* 8:236-246. Mukherjee, S. P. and Chattopadhyay, A. K., 1986, Measures of mobility and some associated inference problems. *Demography India,* 15: 269-280.