GEO-A-CC-4-09 Measuring regional disparity by Sopher index

Dr.SAYANI MUKHOPADHYAY
ASSOCIATE PROFESSOR,DEPT OF GEOGRA

INTRODUCTION

Sopher's Index method is one of the very common method of measuring inequalities.

The method has been developed by David V. Sopher (1974). When we have to measure disparity between two groups or two regions for a specific year or for 2 or more number of years.

- The method is mainly used to measure the relative disparity in a)Male Female Inequality (eg: literacy rate), b)Rural Urban Inequality ,c)SC-Non SC population Inequality, d)ST –Non ST Population Inequality
- All the values of the variables should be in percentage.(if is not given, you have to calculate % value from Absolute value, For eg:% Male Literate= Male Literate Population of any place /Total male Population of that place **X** 100)

FORMULA:

D= Log (X2/X1)+Log{(Q-X1)/(Q-X2)}

D= Disparity Index

where X2> X1 **(For e.g X1 and X2 are lieracy of Two Elements (for eg Rural and Urban)between which disparity have been calculated)**

Q=100

EXPLANATION:

- In this method of measuring disparities, group 2 is taken for the variable having the grater values then the group 1.
- For example, in order to measure disparity between rural and urban literacy rate, the rural literacy rate should be taken as X1 and urban literacy rate should be taken as X2.
- Because in general urban area has the higher literacy rate the rural area.
- If we done the reverse thing the values of the index will be same but the sign will be negative.

RESULT:

- If there is no disparity the value of D will be 0.
- Higher the value of D, the extent of disparity will be higher.
- Lower the value of D, means lower the extent of disparity.

[Note: Sopher's Index was further modified by **Kundu and Rao (1986)**, the formula was as follows —

Ds = log (x2/x1) + log (200 – x1) / (200 – x2) where x2> x1 is considered, for eg x2 is male lieracy and x1 is considered for female literacy rate)]

EXAMPLE:

Calculate the Sopher's Disparity Index between male and female literacy of Haora Sadar Sub-division,2011 of Haora District

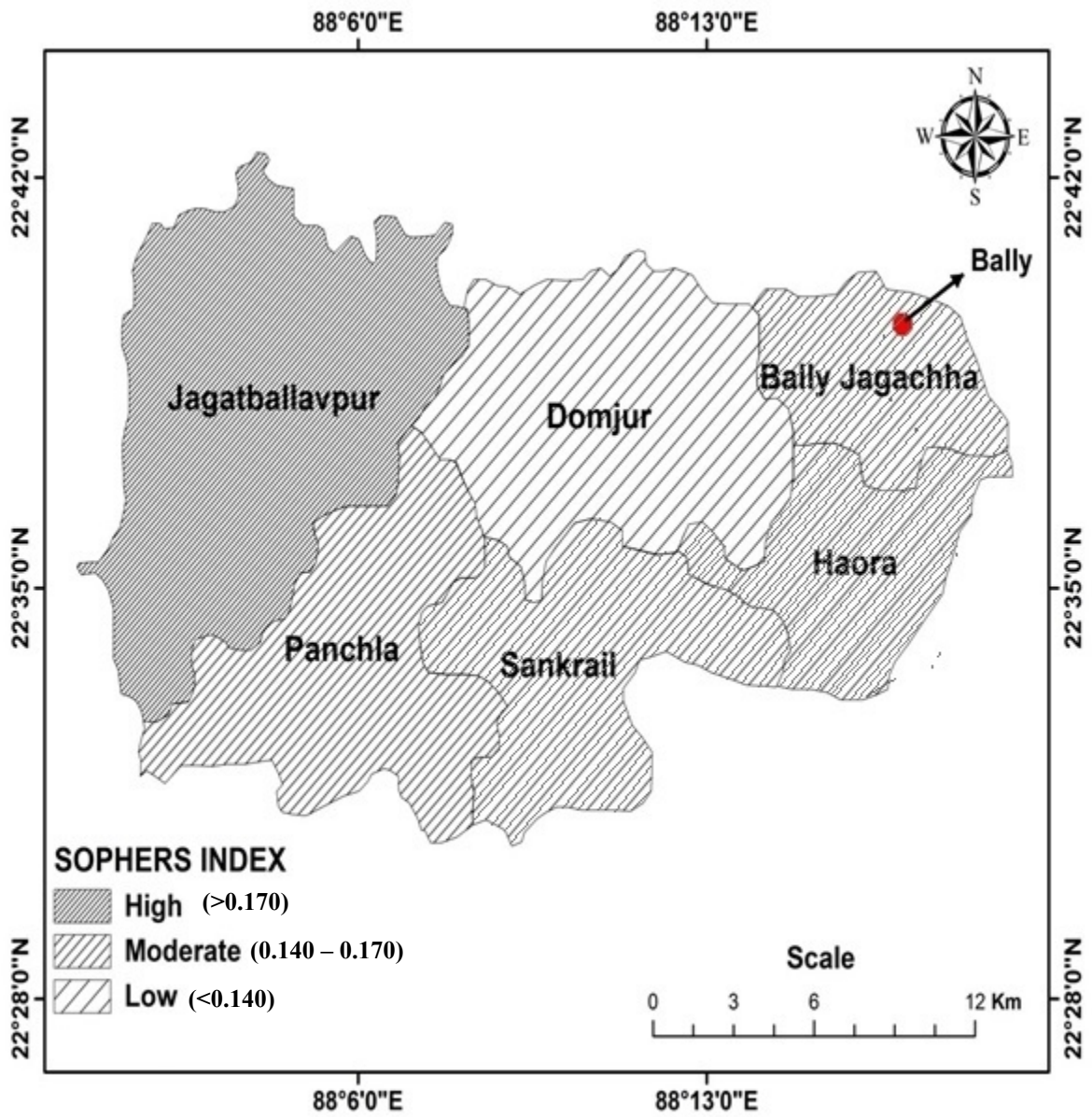
Name	% OF MALE LIT.(X2)	% OF FEMALE LIT. (X1)	x2/x1	log x2/x1	100-X1	100-x2	(100-X1)/(100-X2)	Log 100-x1/100-x2	S0PHERS INDEX
Haora	77.6875	70.7634	1.097848605	0.040542455	29.2366	22.3125	1.31032381	0.117378633	0.157921087
Jagatballavpur	74.0838	65.7915	1.126039078	0.051553463	34.2085	25.9162	1.31996589	0.120562709	0.172116171
Domjur	74.8162	69.6611	1.074002564	0.031005318	30.3389	25.1838	1.204699053	0.080878569	0.111883887
Bally Jagachha	82.4917	76.1326	1.083526636	0.034839592	23.8674	17.5083	1.36320488	0.134561132	0.169400724
Sankrail	77.1588	70.9362	1.087721079	0.036517545	29.0638	22.8412	1.272428769	0.10463348	0.141151025
Panchla	72.3862	65.2945	1.108610986	0.044779178	34.7055	27.6138	1.256817244	0.099272131	0.144051308

Table:V: Range of Inequality on the basis of Sopher's Index

SL. NO.	Type of Inequality	Range of Inequlity	Name of Blocks/Municipalities
1	High	>0.170	Jagatballavpur
2	moderate	0.140 to 0.170	Haora, bally Jagachha, Sankrail, Panchla
3	low	<0.140	Domjur

It is found that highest inequality is found in Jagatballavpur and lowest in Domjur.

DISPARITY INDEX MAP BY SOPHER'S METHOD
SHOWING VARIATION IN MALE FEMALE LITERACY INEQUALITY OF HOARA, 2011



PRACTICE WORK:Calculate Sopher's Index showing disparity district- wise Male –Female lieracy race of West Bengal and prepare a map on the basis of it.

For practice in home, Rural –Urban literacy,Rural male-Female,Urban male –female data are give n.

Various Dimension of Literacy in West Bengal, 2011

DISTRICTS	Total Literacy Rate	Rural Literacy Rate	Urban Literacy Rate	Male Literacy Rate	Female Literacy Rate	Rural Male Literacy Rate	Urban Male Literacy Rate	Rural Female Literacy Rate	Urban Female Literacy Rate
Darjeeling	79.92	74.97	87.48	85.94	73.74	82.5	91.23	67.2	83.65
Jalpaiguri	73.79	70.55	82.33	80.61	66.65	78.31	86.69	62.43	77.78
Coach Behar	75.49	73.87	89.01	81.52	69.08	80.25	92.41	67.07	85.54
Uttar Dinajpur	60.13	57.15	80.67	66.65	53.15	64.06	84.31	49.77	76.69
Dakshin Dinajpur	73.86	71.18	89.42	79.63	67.81	77.42	92.61	64.61	86.15
Malda	62.71	60.42	76.82	67.27	57.84	65.37	78.71	55.18	74.71
Mursidabad	67.53	66.27	72.65	71.02	63.88	69.52	77.15	62.84	68.02
Birbhum	70.9	69.25	81.74	77.42	64.07	76.01	86.75	62.18	76.55
Burdwan	77.15	73.39	82.75	83.44	70.47	80.05	88.43	66.39	76.63
Nadia	75.58	71.5	85.88	79.58	71.35	76.65	89.63	67.08	81.98
North 24 Parganas	84.95	78.11	89.8	88.66	81.05	82.86	92.79	73.08	86.66
Hugli	82.55	79.22	87.75	87.93	76.95	85.71	91.34	72.5	83.95
Bankura	70.95	69.6	85.23	81	60.44	80.06	90.97	58.66	79.24
Puruliya	65.38	63.75	76.24	78.85	51.29	77.96	84.68	48.93	67.21
East Mednipur	87.66	87.47	89.14	93.14	81.81	93.1	93.41	81.45	82.3
West Mednipur	79.04	77.92	87.01	86.66	71.11	85.97	91.61	69.45	84.98
Howrah	83.85	80.82	87.14	87.69	79.73	86.06	88.61	75.29	79.09
Kolkata	87.14	0	87.01	89.04	84.98	0	89.08	0	82.25
South 24 Parganas	78.57	76.78	83.62	84.72	72.09	83.59	87.93	69.59	84.52

THANKYOU