

Assessment of Facility Deprivation in the Households of the North Eastern States of India



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Introduction

The work makes an attempt to quantify deprivation in the availability of household amenities like supply of safe drinking water, electricity and sanitary facility in the different districts in northeast Indian states. The term 'facility deprivation' is introduced to specify the particular dimension of deprivation under consideration and the composite index used for quantification of the same is termed the 'Facility Deprivation Index' (FDI).

Objective of the Study

- (i) To quantify the level of facility deprivation in the different districts of North East India in terms of basic household facilities namely, supply of safe drinking water, electricity and sanitary facility.
- (ii) To classify the districts depending on the level of facility deprivation.

Data Source

"Ranking and Mapping of Districts based on Socio-economic and Demographic Indicators" a report by Ram and Sekhar (2006), published by the International Institute of Population Studies, Mumbai.

Methodology

The percentage of households of each district covered under the three basic facilities are combined (after normalization) to obtain a composite index of deprivation. The probability distribution of the index is determined and is used to classify the districts as highly deprived, moderately deprived and less deprived districts.

The Facility Deprivation Index

From the data, which is the percentage of households in a district covered by the different facilities, we obtain the deprivation indicator (DI) for each facility which are the normalized values.

DI_{ijk} is the normalized score for the k^{th} facility in the j^{th} district of the i^{th} state

$$FDI_{ij} = W_1 \times DI_{ij1} + W_2 \times DI_{ij2} + W_3 \times DI_{ij3},$$

with $\sum_{k=1}^3 W_k = 1$... (1)

where W_k represents the weight associated with the k^{th} basic facility ($k = 1, 2, 3$).

Iyengar and Sudarshan (1982), further linked the weight to variance of deprivation across the regions. More precisely, they postulated that

$$W_k = \frac{C}{\sqrt{Var(DI_{ijk})}} \quad \dots(2)$$

where C is a normalizing constant that follows

$$C = \left[\sum_{k=1}^3 \frac{1}{\sqrt{Var(DI_{ijk})}} \right]^{-1} \quad \dots(3)$$

The distributional pattern of the FDI_{ij} were tested and were found to satisfy the Beta distribution Type -I.

The maximum likelihood method was used to estimate the parameters of the distribution. Thus, $FDI_{ij} \sim \beta_1(5.7465, 6.7224)$.

We found two real numbers $c, d \in [0, 1]$, such that, $P[0 \leq FDI_{ij} \leq c] = 0.3333$ and $P[c \leq FDI_{ij} \leq d] = 0.3333$
Here we found $c = 0.3974$ and $d = 0.5209$

Table 1. Stages of Deprivation classified by the FDI

Stage of deprivation	Values of FDI
Low	Less than 0.3974
Moderate	Between 0.3974 but less than 0.5209
High	0.5209 or higher

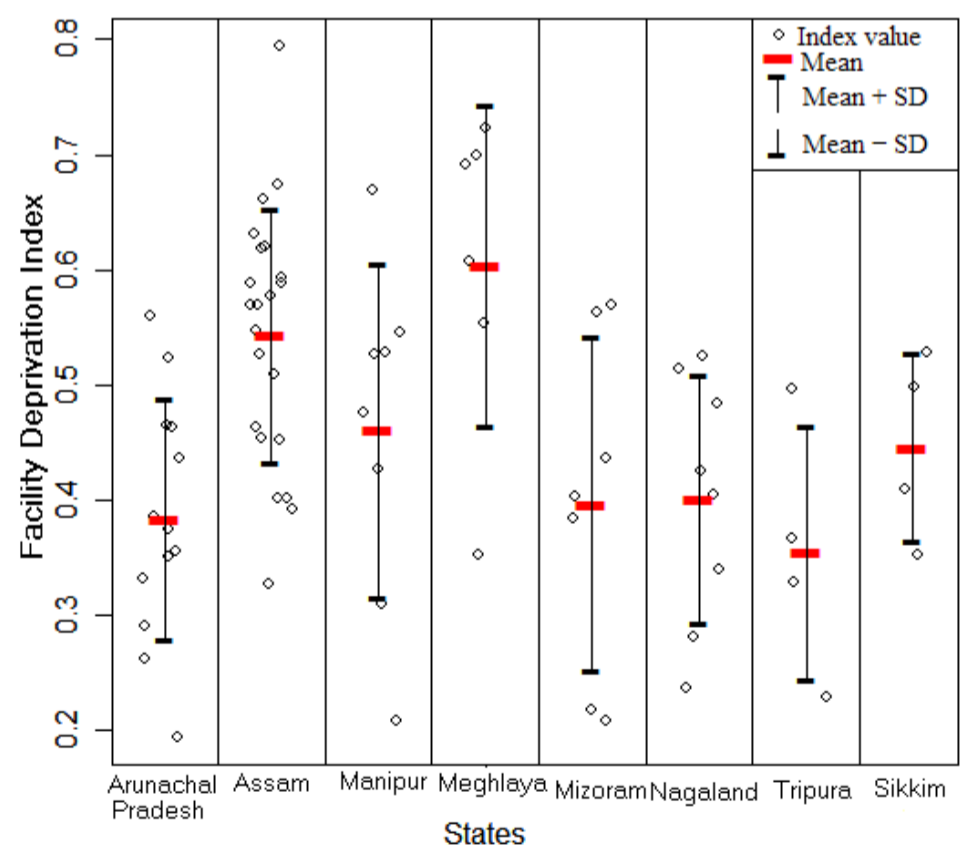
Key Findings

- Sikkim and Nagaland has no highly deprived district.
- In almost all the states the district in which the capital city lies has a very low level of deprivation.
- Assam though well located and have better communication has maximum proportion of highly deprived districts.
- Most of the highly deprived districts are populated with the minorities either in terms of religion or tribes or mother tongue.
- Extreme topographical factors and insurgency problems are responsible for high deprivation in some of the districts.

Table 2. Districts classified by the level of deprivation

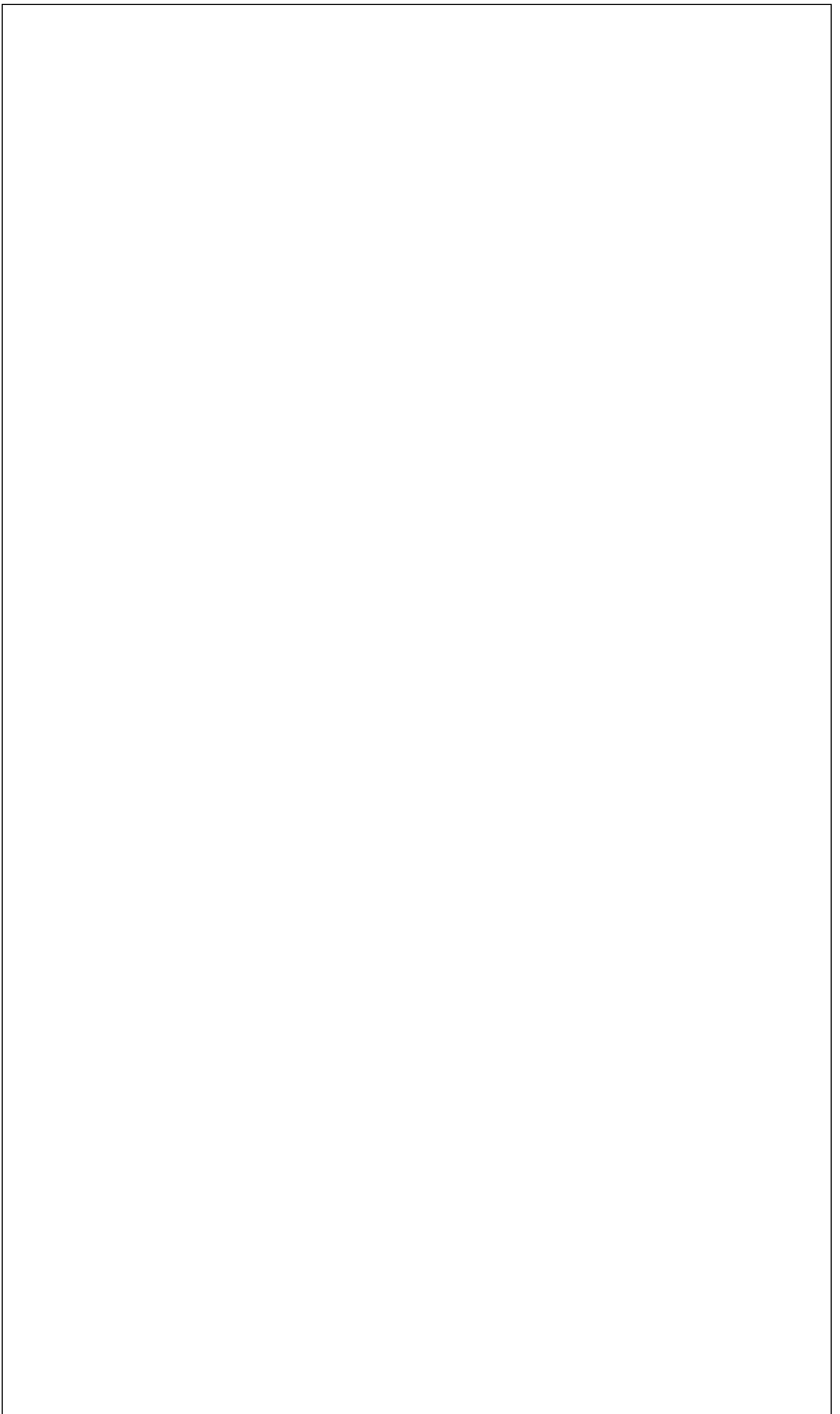
State	Type of Deprivation	Districts
Arunachal Pradesh	Low	Dibang valley, East Siang, Lower Subansiri, Papum Pare, Tawang, Upper Subansiri, West Kameng, West Siang
	Moderate	Lohit, Tirap, Upper Siang
	High	East Kameng, Changlang
Assam	Low	Dibrugarh, Kamrup, Nagaon
	Moderate	Barpeta, Golaghat, Jorhat, Marigaon, Sibsagar
	High	Bongaigaon, Cachar, Darrang, Dhemaji, Dhubri, Goalpara, Hailakandi, Karbi Anglong, Karimganj, Kokrajhar, Lakhimpur, Nalbari, North Cachar Hills, Sonitpur
Manipur	Low	Imphal East, Imphal West
	Moderate	Thoubal, Ukhrul, Churachandpur
	High	Chandel, Tamenglong, Senapati
Meghalaya	Low	East Khasi Hills
	Moderate	
	High	East Garo Hills, Jaintia Hills, Ri Bhoi, South Garo Hills, West Khasi Hills
Mizoram	Low	Aizawl, Erchipp, Kolasib
	Moderate	Champhai, Lunglei
	High	Lawngtlai, Mamit
Nagaland	Low	Dimapur, Mokokchung, Phek
	Moderate	Kohima, Mon, Tuensang, Wokha, Zunheboto
	High	
Sikkim	Low	West, South, East
	Moderate	North
	High	
Tripura	Low	West Tripura
	Moderate	South Tripura, North Tripura
	High	Dhalai

Jittered Plot: Visualizing the values of Facility Deprivation across the States



Reference

- Ram F. and Sekhar C. (2006) *Ranking and Mapping of Districts based on Socio-economic and Demographic Indicators*. International Institute of Population Studies, Mumbai.
- Iyengar N. S. and Sudarshan P. (1982) A method of classifying regions from multivariate data. *Economic and Political Weekly*. Dec. 18, pp. 2048-2052.



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