

Status of Food and Nutritional Security in India

Paper: ECO 402 (Development Economics: Experiences)

Semester IV (Group A)

Dr. Pinaki Das

Associate Professor and Head
Department of Economics, Vidyasagar University

1.1 Learning Outcomes

- To understand the **Global Hunger Index**
- To analyse the **AAA approach of food security** across states of India.
- To analyse the *status of food insecurity* across the states in India.
- To analyse the *status of nutritional insecurity* across the states of India.

1. Global Hunger Index

1. Global Hunger Index

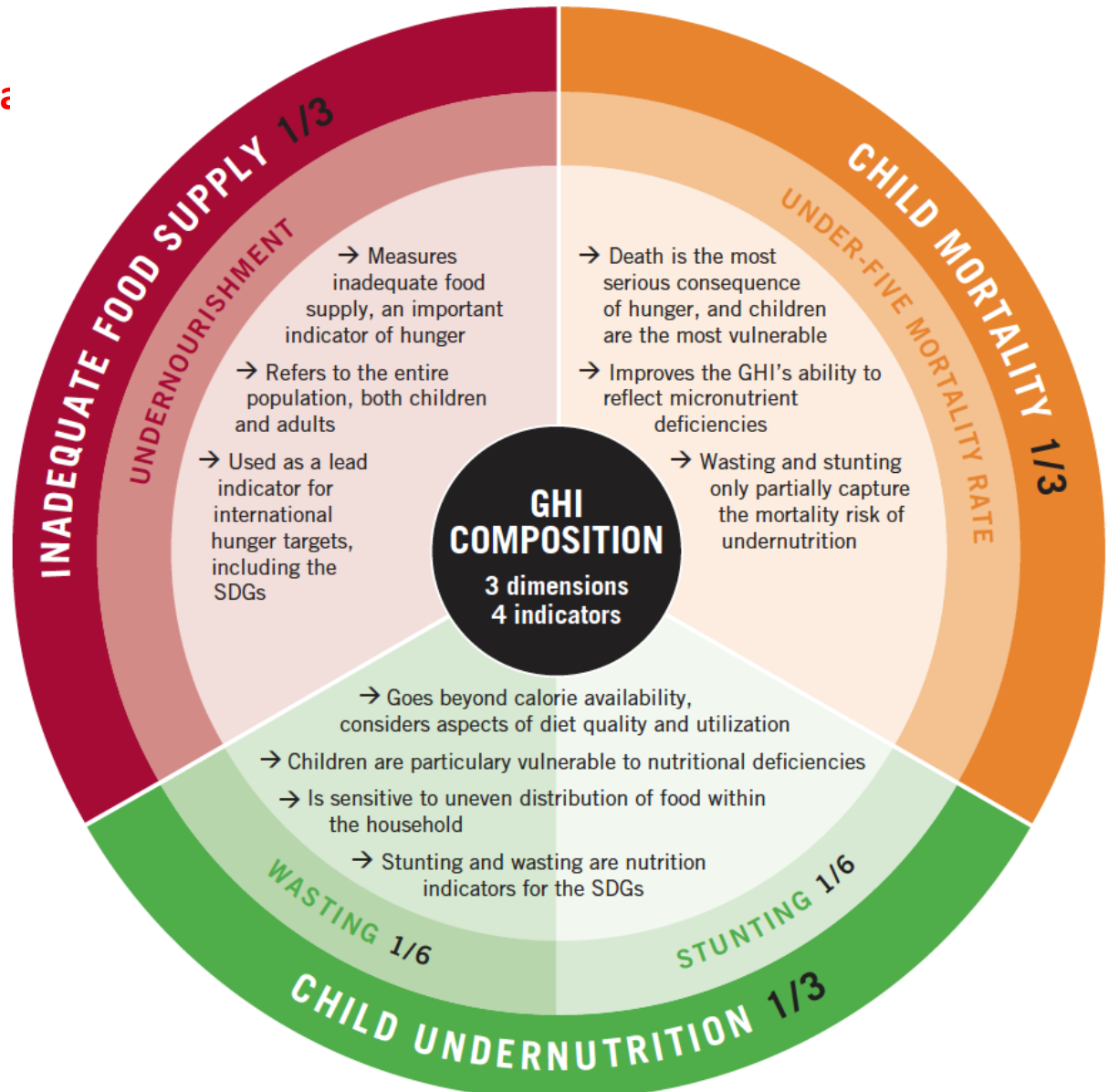
Four indicators:

➤ **UNDERNOURISHMENT:** intake

➤ **CHILD WASTING:**
low weight for their height
(acute undernutrition)

➤ **CHILD STUNTING:**
low height for their age
(chronic undernutrition)

➤ **CHILD MORTALITY:**
under 5 mortality

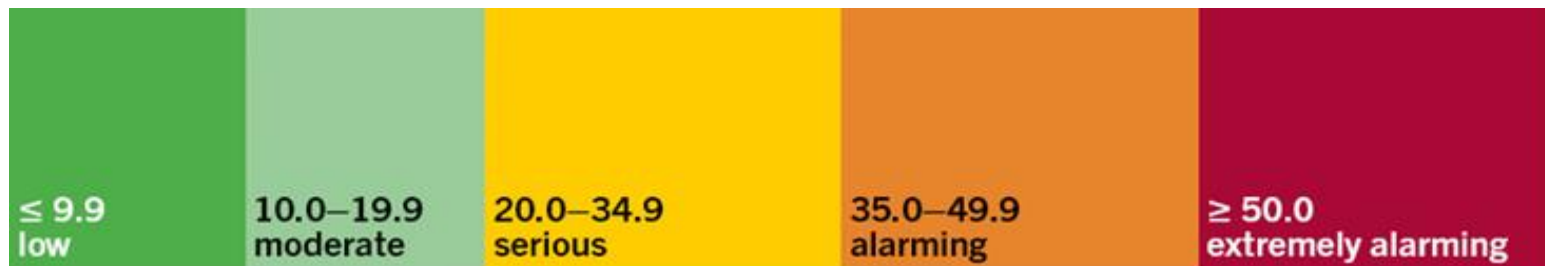
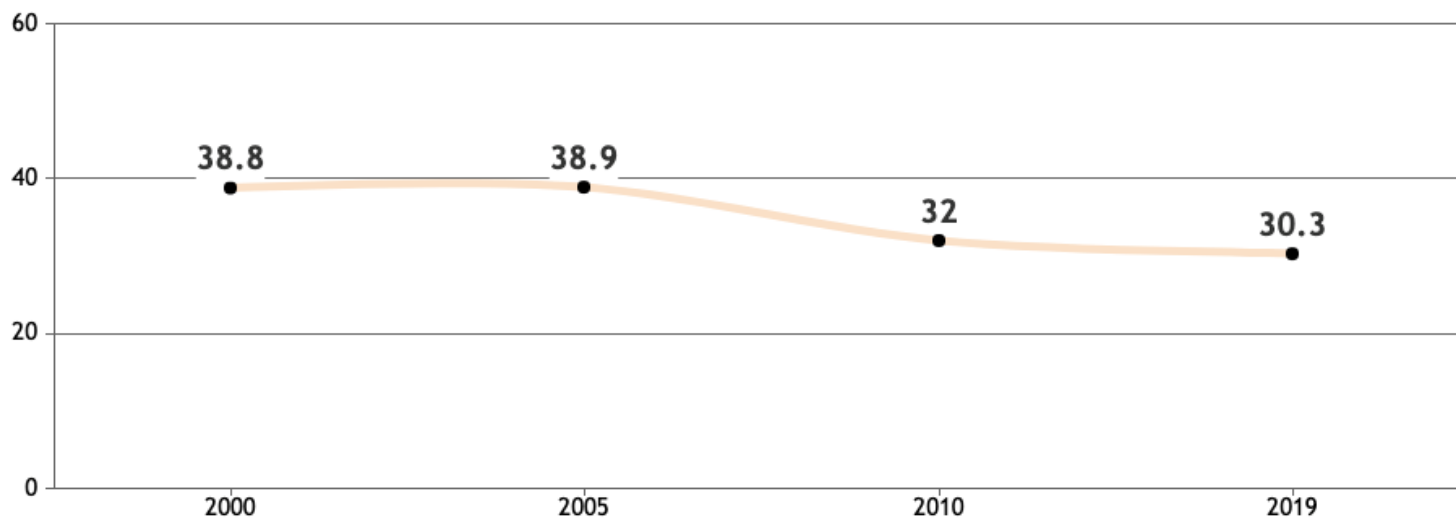


1. Global Hunger Index

In the 2019 Global Hunger Index, India ranks 102nd out of 117 qualifying countries.

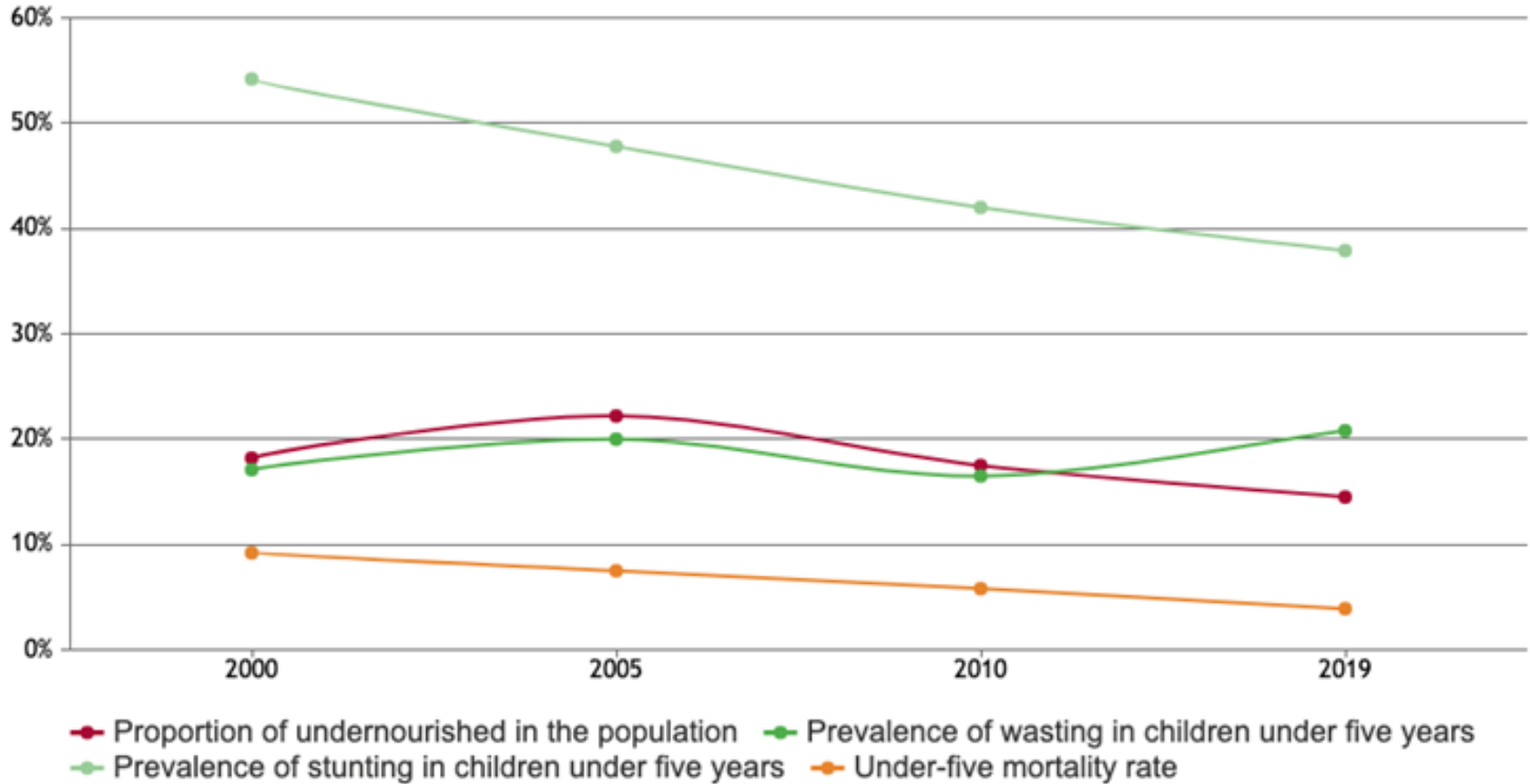
With a score of 30.3, India suffers from a level of hunger that is serious.

GHI Score Trend for India

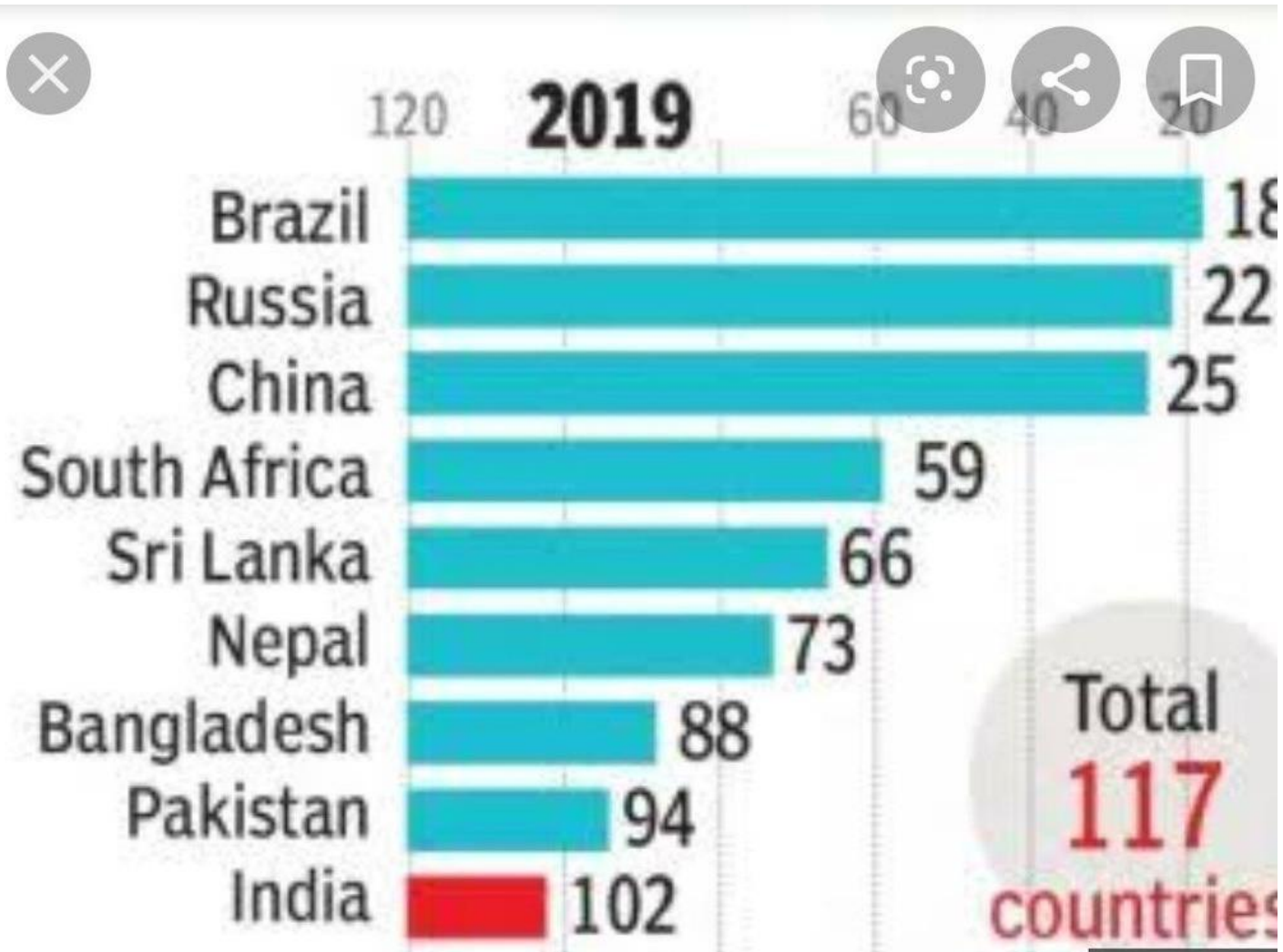


1. Global Hunger Index

Trend for Indicator Values - India



1. Global Hunger Index



2. Food Security: AAA Approach

2. Food Security

Definition:

Food and Agriculture Organization (FAO, 1996) defined food security as
“a situation at the individual, household, regional , national and global level, when all people , at all times, have physical and economic access to safe and sufficient food to meet their dietary needs and food preferences for an active , healthy and productive life.”

AAA Approach of Food Security

Availability : A physical measure of food supplies

Accessibility : An economic measure of the income needed to purchase food

Absorption: It's basically refers assimilation of food eaten in order to lead a long and healthy life.

2. Food Security

2.1 Availability, Accessibility and Absorption of Food

On the basis of 3A approach we analyse the food security status.

➤ **The indicators of Food Availability are**

- *Availability of food grains.,*
- *Availability of milk gms per day*
- *Availability of eggs per year*
- *yield rate of food grains*
- *net cropped area*
- *net irrigated area*
- *road densities.*

➤ **Food Accessibility indicators are**

- *meals availability*
- *monthly per capita consumption of food items*
- *literacy rate*
- *rural casual wage rate.*

➤ **Food Absorbability indicators are**

- *per consumer unit intake of calorie, protein and fat*
- *access to rural drinking water, sanitation facilities, and primary health care.*

2. Food Security

2.1 Availability, Accessibility and Absorption of Food : Methodology

Methodology of Aggregation:

Dimensional Index (DI)

$$DI = \frac{\text{Actual } X_i - \text{Min } X_i}{\text{Max } X_i - \text{Min } X_i}$$

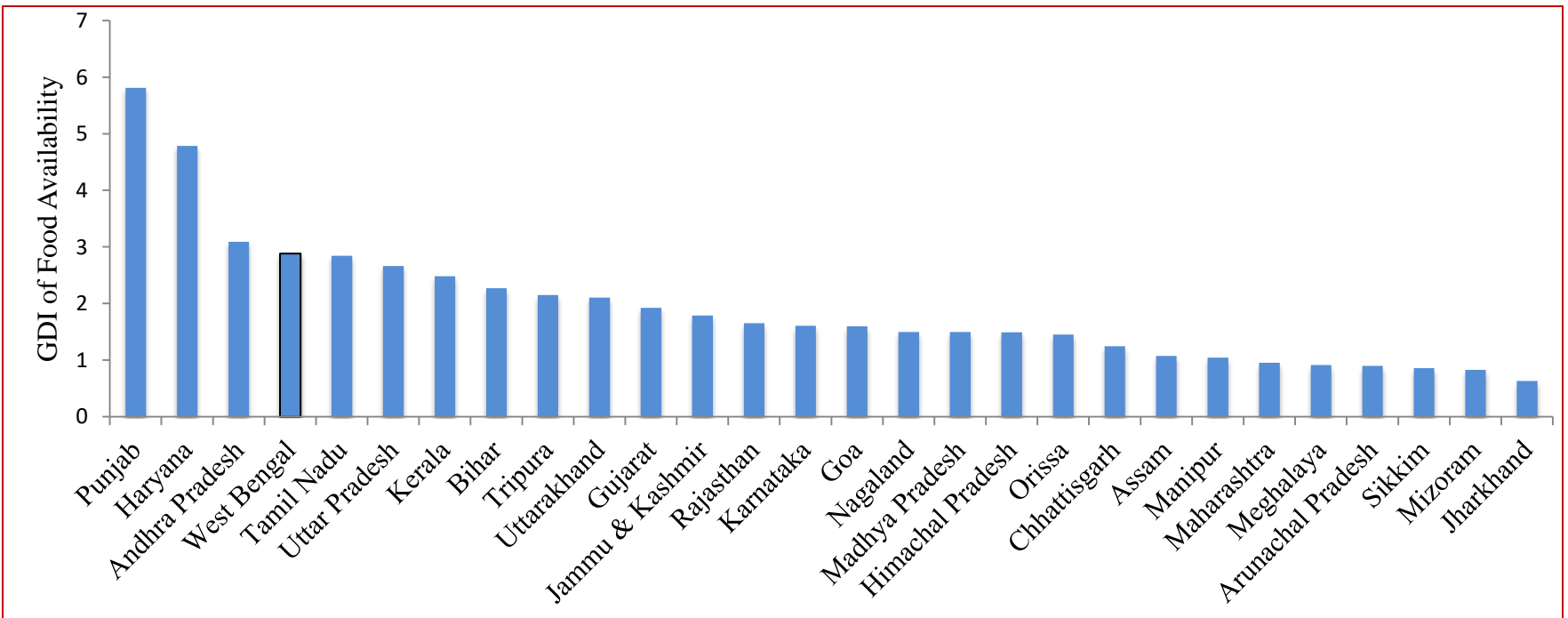
Group Dimension Index (GDI) = $1/n \sum DI$

2.1.1 The Food Availability Situation – Relative Position of States

On the basis of DI GDI, we categorised each state separately for Food availability. taken 28 state only

- Punjab was first & Jharkhand was last and West Bengal was 6th ,in 2004-05
- Punjab was first ,Mizoram was last ,West Bengal was 4th .,in 2009-10
- Punjab was first, Jharkhand was last. West Bengal in 4th was in 2011-12.

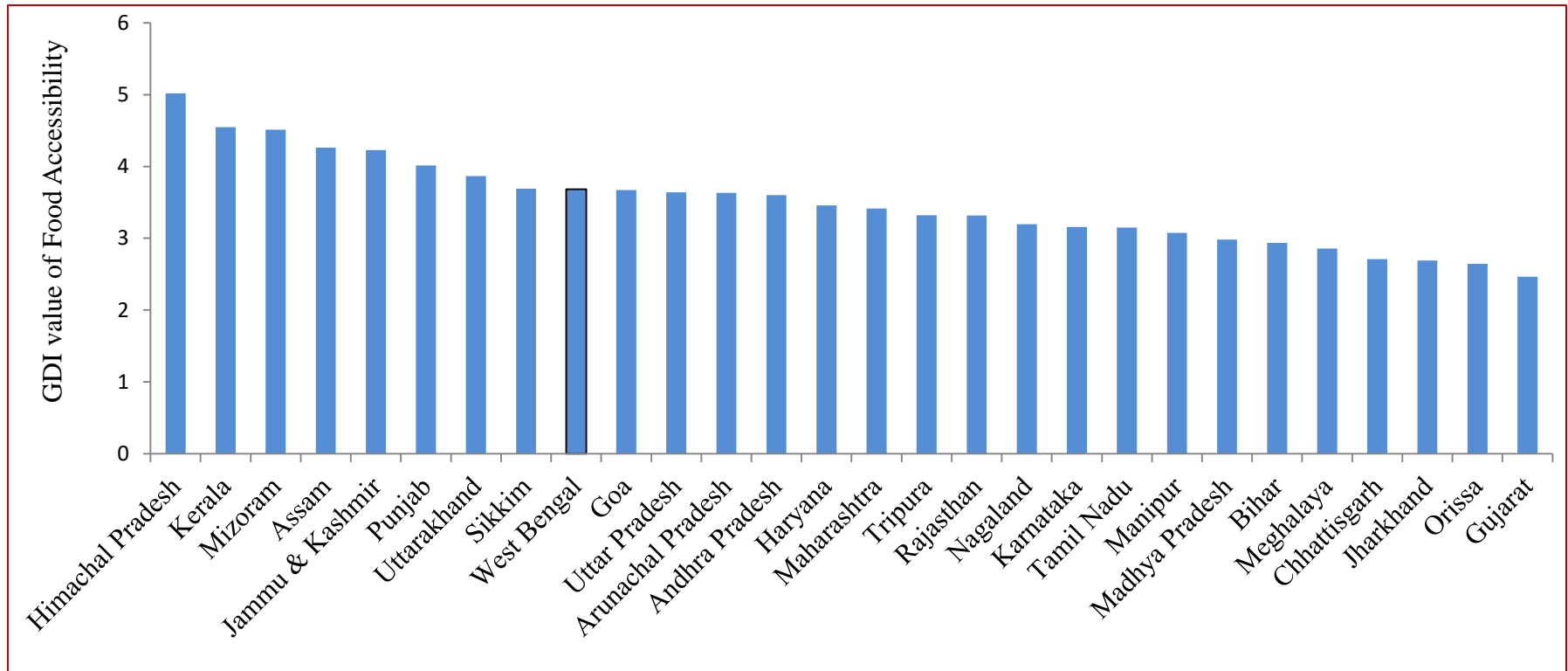
Availability Position of States in 2011-12



2.1.2 Relative Position of States in Terms of Food Accessibility

- Himachal Pradesh was 1st, Jharkhand was last, West Bengal 12th in 2004-05.
- Himachal Pradesh was 1st, Jharkhand was last, West Bengal 20th in 2009-10.
- Himachal Pradesh was 1st, Gujarat was last, West Bengal 9th in 2011-12.

Accessibility Position Of States in 2011-12

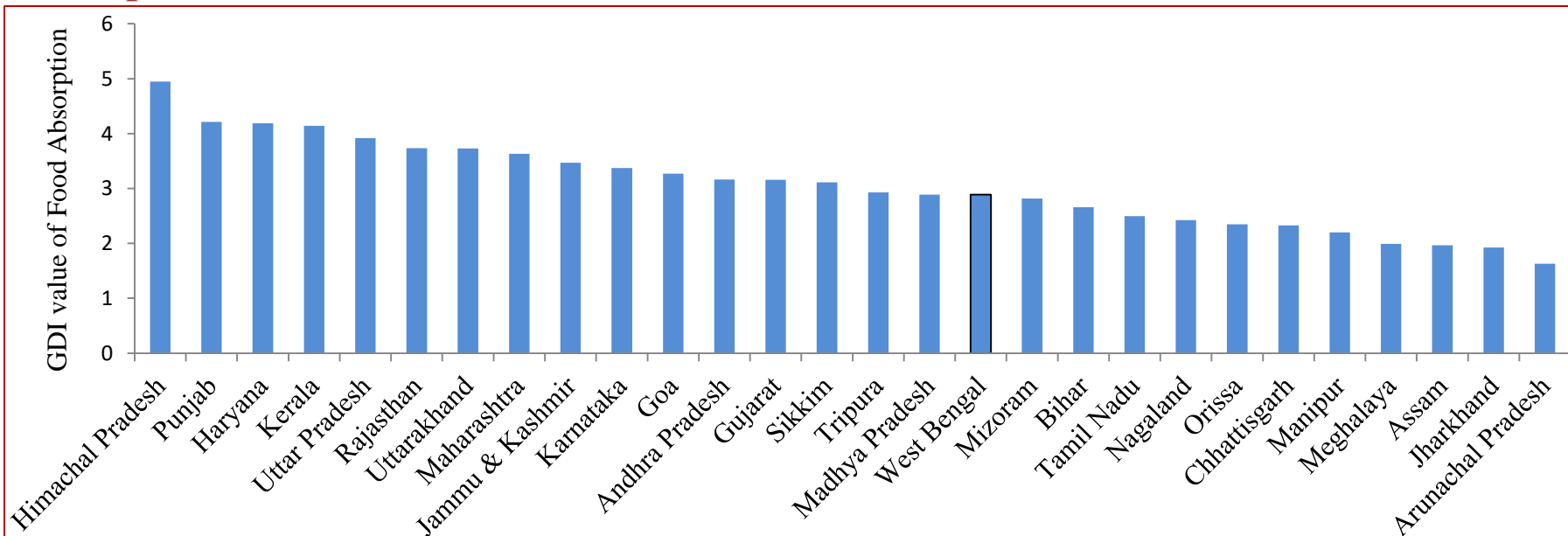


2.1.3 Food Absorption Situation –Relative Position of States

In respect to food Absorption, it has been a mutual interchanging in the relative position of states

- Punjab was first, Orissa was last, west Bengal was 16th in 2004-05.
- Punjab was first, Meghalaya was last, west Bengal was 16th in 2009-10.
- Himachal Pradesh was first, Arunachal Pradesh was last, west Bengal was 17th in 2011-12

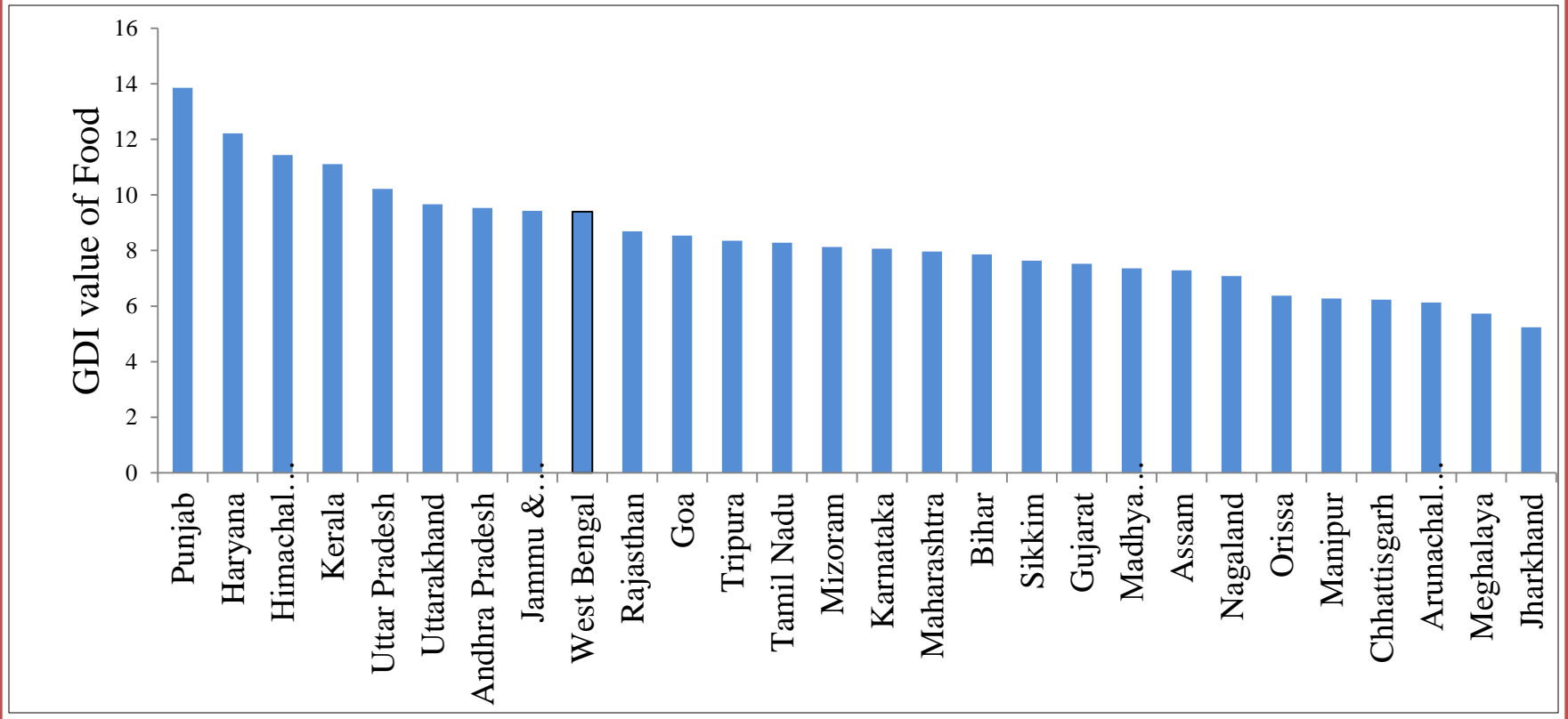
Absorption Position Of States in 2011-12



2.1.4 GDI of Availability, Accessibility and Absorption

- Punjab was first, Chhattisgarh was last, West Bengal was 9th in 2004-05.
- Punjab was first, Meghalaya was last and West Bengal 11th in 2009-10.
- Punjab was first, Jharkhand was last and West Bengal 9th in 2011-12

GDI Overall Position of States in 2011-12



3. Status of Food Insecurity

3.1 Methodology–

□ Estimation of Food Security Line

➤ In the present study the food security line is estimated from the poverty line following the guideline of the of the Tendulkar Committee Report on behalf of the Planning Commission of India 2009 and 2014.

➤ The percentage share of food to total monthly per capita consumption expenditure (MPCE) of the poverty line class is considered for estimation of food insecurity line.

➤ The food security lines (FSL) are derived from poverty line as follows

$$FSL_{ij} = PL_{ij} * X_{ij} \quad [i= 1, 2...28 \text{ and } j=1, 2]$$

Where FSL_{ij} is the food insecurity line of the i-th state in j-th region. PL_{ij} is the poverty line i-th state in j-th region, and X_{ij} is the share of food of i-th state in j-th region.

3.1 Methodology (continue.....)

□ The status of food insecurity is measured by using the methodology of Foster, Greer and Therbecke (FGT) (1984) as

$$FI_{\alpha} = \frac{1}{N} \sum_{i=1}^q \left(\frac{P_F F - E_i}{P_F F} \right)^{\alpha} ; \alpha = 0, 1, \text{ and } 2$$

Where $P_F F$ the food security line and E_i is the actual food expenditure

‘q’ is the food insecure people and ‘N’ is the total no of individuals.

When, $\alpha = 0$, FI_0 (IFI) implies the incidence of food insecurity

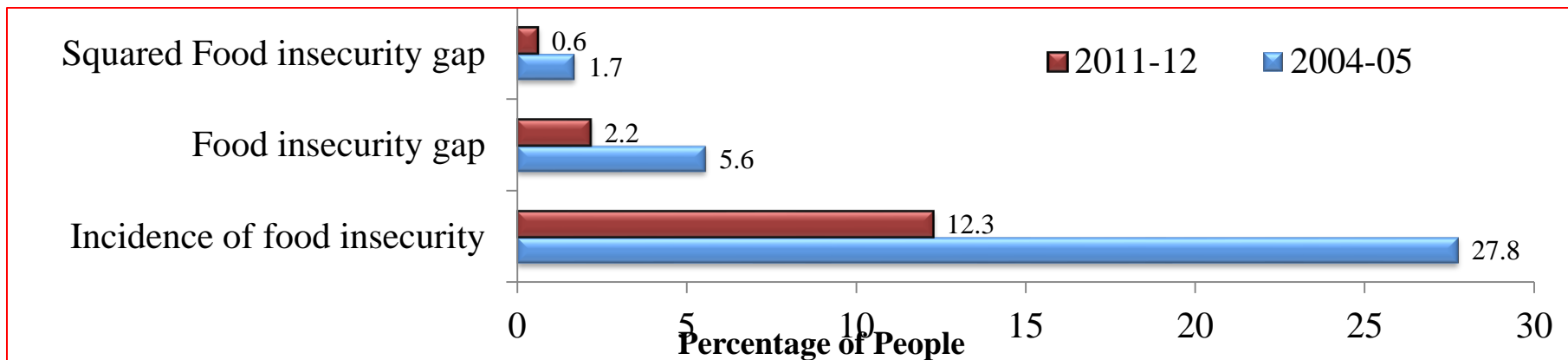
$\alpha = 1$, FI_1 (FIG) implies the depth of food insecurity

And $\alpha = 2$, FI_2 (SFIG) implies the severity of food insecurity

3.2 Status of Food Insecurity of households in India

3.2.1 Status of Food Security of India

- ✓ Food insecure people have decreased to 12.3 percent in 2011-12
- ✓ Food insecurity gap (depth) and Square food insecurity gap (Severity) decreased to 2.2 per cent and 0.6 percent respectively in 2011-12



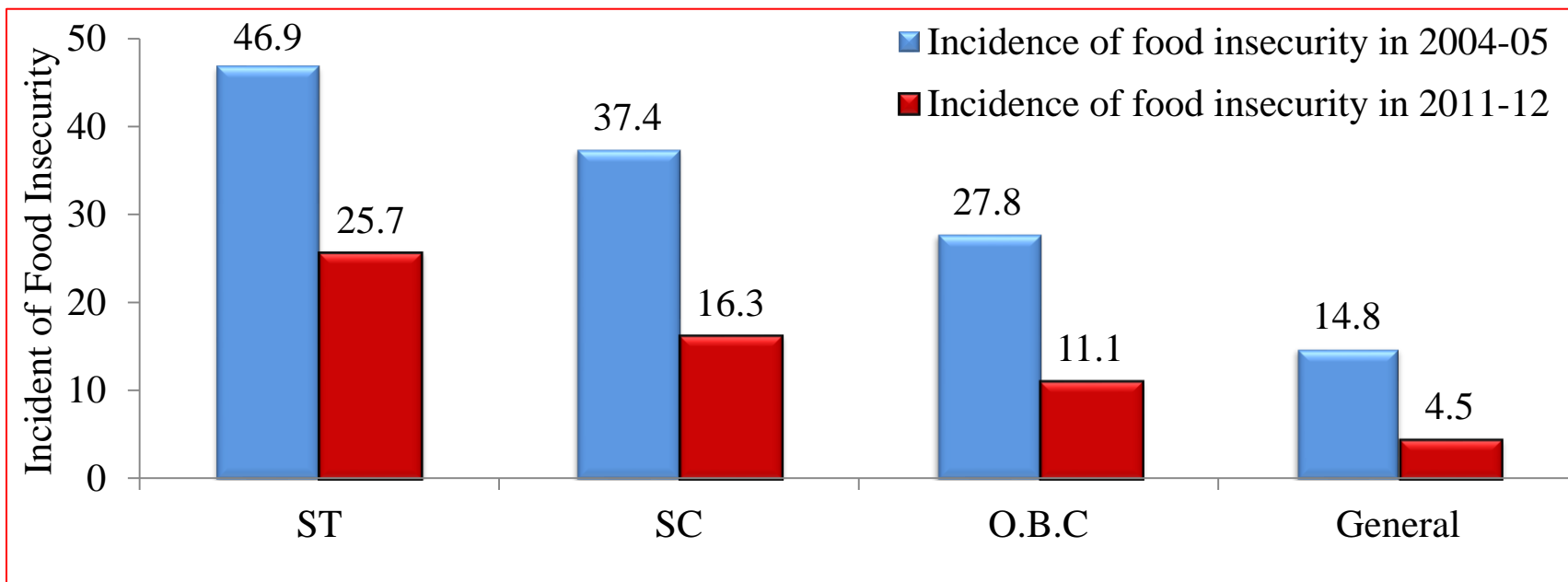
3.2.2 Food insecurity situation in Rural and Urban India

	2004-05		2011-12	
	Rural	Urban	Rural	Urban
IFI	33.4	11.2	15.6	3.9
FIG	6.8	1.9	2.8	0.6
SFIG	2.1	0.5	0.8	0.2

✓ In rural India, food insecure people decreased from 33.4 per cent in 2004-05 to 15.6 per cent in 2011-12.

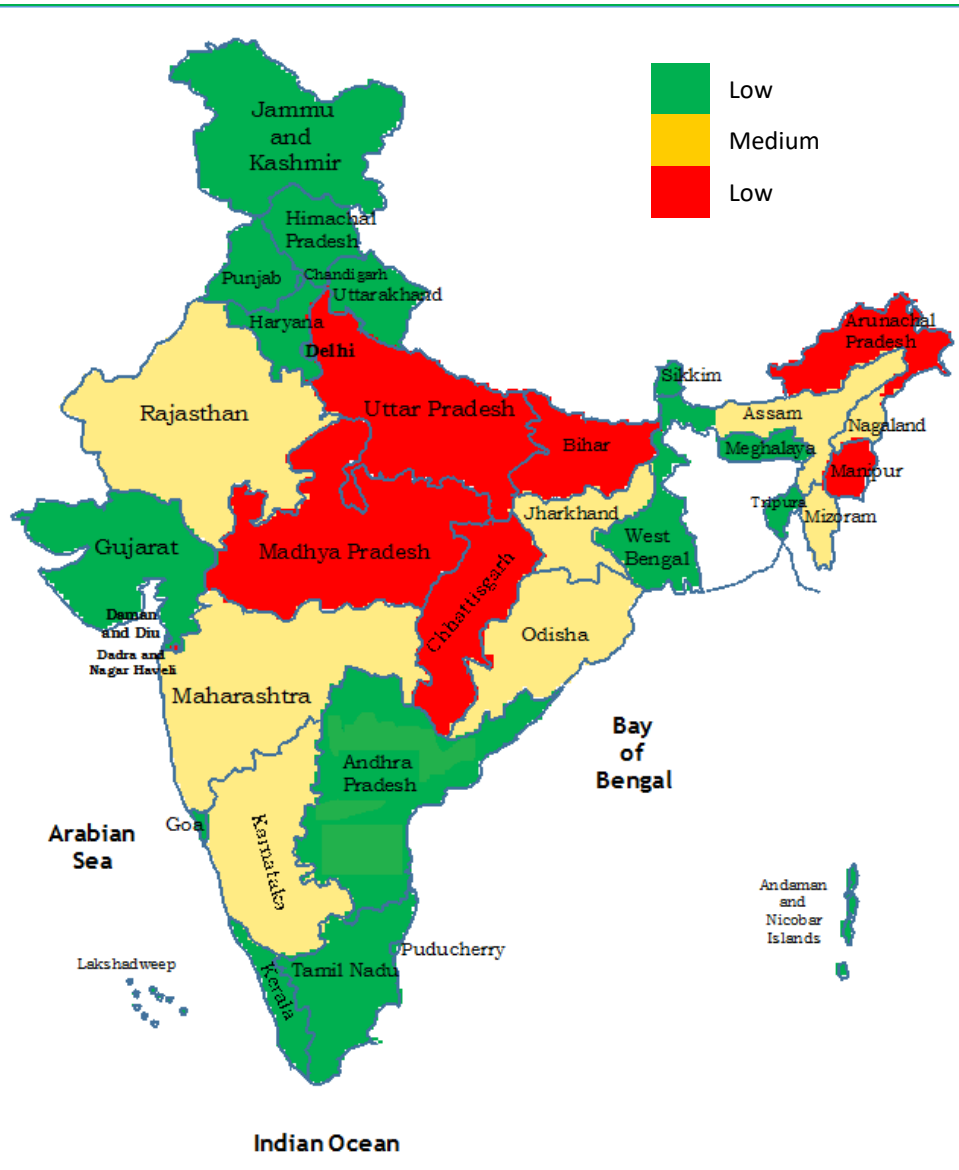
✓ In case of urban India, IFI decreased from 11.2 per cent in 2004-05 to 3.9 per cent in 2011-12,

3.3 Food Insecurity by caste in India, 2004-05 and 2011-12



- The IFI of STs People was substantially declined from 46.9 per cent in 2004-05 to 25.7 per cent in 2011-12.
- For SCs it declined from 37.4 per cent to 16.27 per cent.
- The IFI also decreased for OBC and General caste people during 2004-05 to 2011-12.
- The decrease of IFI was higher (more than 20 percentage points) for SCs and STs during this period .

3.4 Incidence of Food Insecurity across states in India at combined level, 2011-12



✓ Most of the states improved their IFI in 2011-12 in comparison with 2004-05.

✓ In 2011-12, north east states like Arunachal Pradesh, Manipur and central most states like Uttar Pradesh, Madhya Pradesh, Bihar, and Chandigarh witnessed high level of food insecurity.

✓ The incidence of food insecurity is relatively low in the most North West states and most south states. it was low in some east and north east states like West Bengal, Sikkim, Manipur and Tripura.

4. Status of Nutrition Insecurity

4.1 Nutrition security: Definition

Nutrition security exists when all people at all times have

- *physical, social and economic access to food,*
- *which is consumed in sufficient quantity and quality*
- *to meet their dietary needs and food preferences, and*
- *is supported by an environment of adequate sanitation, health services and care,*
- *allowing for a healthy and active life.*

4.2 Status of Nutritional Insecurity: Methodology

Calculation of Calorie Intake Value of the Households

➤ In view of the fact that calorie consumption calculated by converting the reported consumed quantities of 339 and 329 food items into calorie figures of each households as collected by NSSO data for the year 2004-05 & 2011-12.

➤ We have calculated the calorie value of 124644 households in the year 2004-05 and 101662 household in the year 2011-12. we get 124644×339 order matrix in 2004-05 and 101662×329 order matrix for the year 2011-12.

Methodology(continue....)

□ *Status of nutrition security*

The status of nutrition insecurity is measured by using the methodology of Foster, Greer and Therbecke (FGT) (1984) as

$$NI_{\alpha} = \sum_{i=1}^q \left(\frac{\bar{C} - C_i}{\bar{C}} \right)^{\alpha} ; \alpha = 0, 1, \text{ and } 2$$

Where, \bar{C} is the recommended Calorie requirement per capita per day of a person and C_i is the actual per capita per day consumption of calories of the i -th person.

When, $\alpha = 0$, NI_0 , implies the Incidence of Nutrition Insecurity (INI)

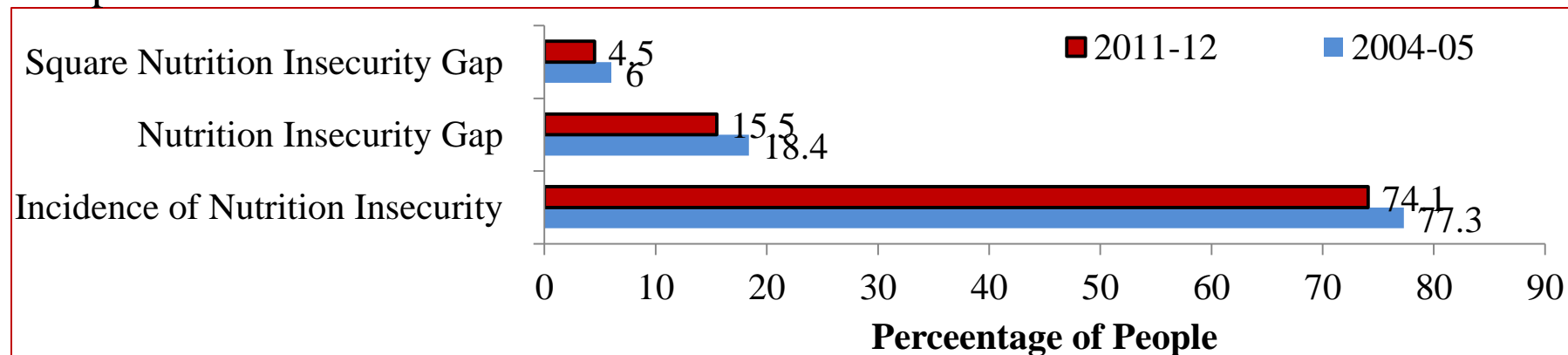
$\alpha = 1$, NI_1 , implies the Nutrition Insecurity Gap (NIG)

And $\alpha = 2$, NI_2 , implies the Square Nutrition Insecurity Gap (SNIG)

4.3 Status of Nutrition Insecurity of households in India

4.3.1 Status of Nutrition Insecurity in India

✓ Overall nutrition security situation in India has been improved. in 2011-12 compare to 2004-05



4.3.2 Nutrition Insecurity situation in Rural and Urban India

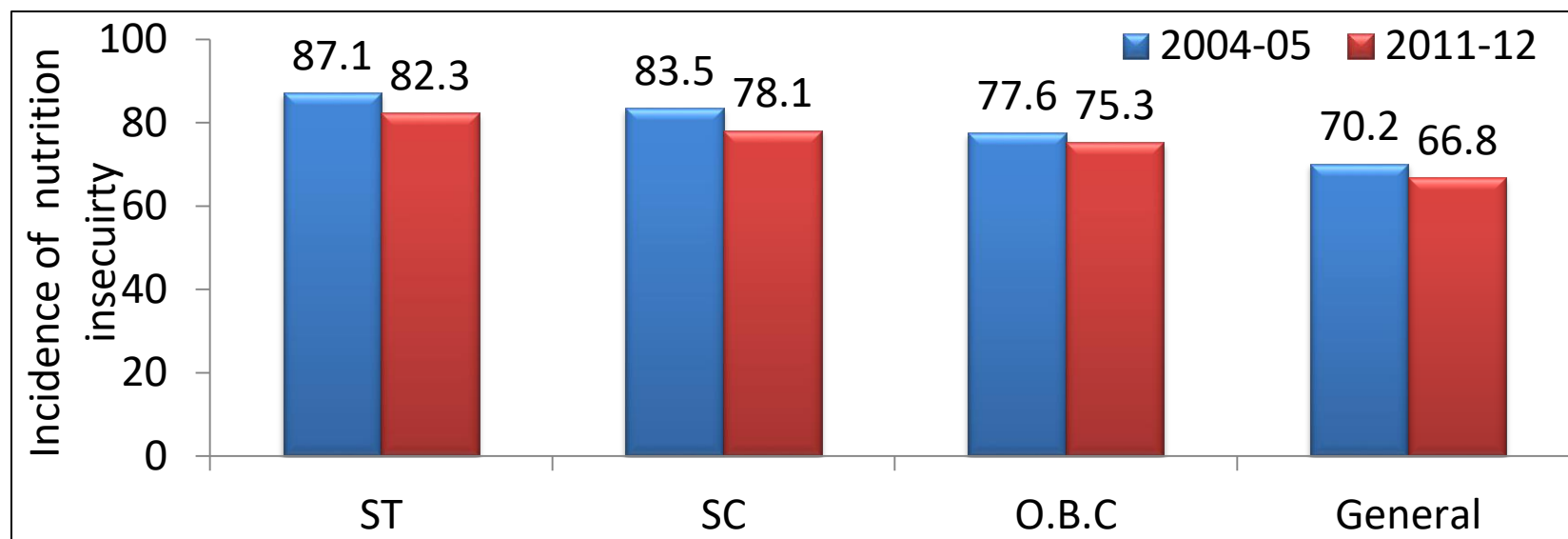
	2004-05		2011-12	
	Rural	Urban	Rural	Urban
INI	80.9	66.7	78.5	62.9
NIG	20.1	13.5	17.1	11.6
SNIG	6.6	4.0	5.1	3.1

✓ The nutrition insecure people in rural India decreased from 80.9 per cent in 2004-05 to 78.5 per cent in 2011-12.

✓ In case of urban India INI decreased from 66.7 per cent in 2004-05 to 62.9 per cent in 2011-12

✓ The incidence, depth and severity of nutrition insecurity are high in rural India in comparison with urban India.

4.4 Incidence of Nutrition Insecurity by Caste in India, 2004-05 and 2011-12.

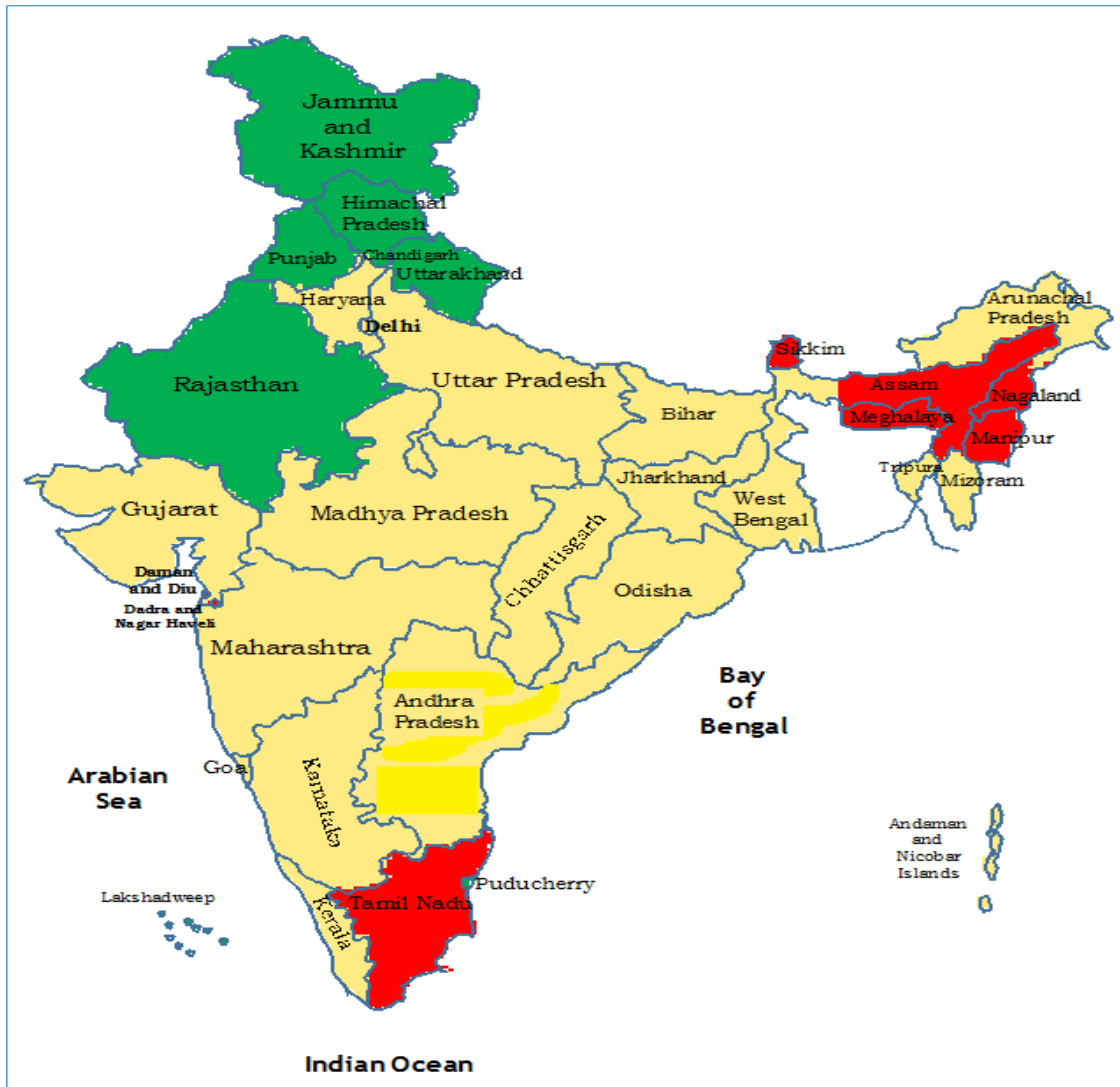


✓ Nutrition insecure people are relatively high for socially disadvantaged class – STs and SCs for both the years.

✓ The nutritional insecure STs people substantially declined 87.10 per cent in 2004-05 to 82.30 per cent in 2011-12. For SCs it declined from 83.50 per cent to 78.06 per cent. The INI also decreased for OBC and General caste people during 2004-05 to 2011-12.

✓ Irrespective of social castes, INI marginally declined during 2004-05 to 2011-12

4.5 Incidence of Nutrition Insecurity across States in India, 2011-12

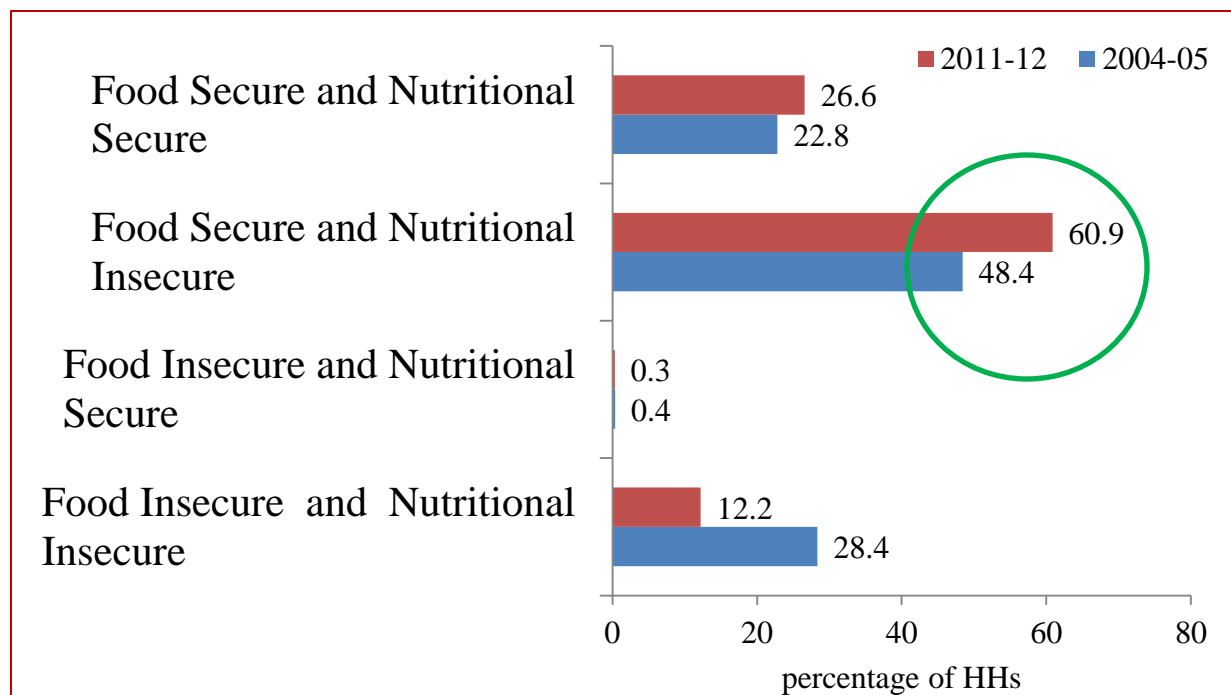


✓ Most of the states improved their status of INI in 2011-12 in comparison with 2004-05.

✓ In 2011-12 north east states namely Sikkim, Manipur, Andhra Pradesh, Nagaland and south most states like Tamil Nadu witnessed high level of nutritional insecurity.

✓ The incidence of nutrition insecurity is relatively low in the north west states like Jammu and Kashmir, Himachal Pradesh, Punjab, Uttarakhand and Rajasthan

5. Food vis-à-vis Nutrition Insecurity in rural India



✓ In 2004-05, 28.74 per cent households were food insecure whereas nutrition insecure households were 76.78 per cent respectively.

✓ Among 71.26 per cent of food secure households 48.43 per cent households were nutritionally insecure and only 22.83 per cent households were nutritionally secure.

✓ In 2011-12, 12.54 per cent households were food insecure and 73.08 per cent households were nutrition insecure.

✓ Among 87.46 per cent of food secure households 60.86 per cent households were nutritionally insecure and only 26.59 per cent households were nutritionally secure.

✓ That is, 60.86 per cent of the households who have purchasing power but they are not able to choose the appropriate food items and they are nutritionally insecure.

Conclusions

- ✓ It has been found that the states which are relatively very poor in terms of agriculture, education and health sector, were the least food secure.
- ✓ Both rural and urban India has witnessed a fall of incidence, depth and severity of food insecurity. But the incidence, depth and severity of nutritional insecurity only marginally declined in rural India.
- ✓ The Incidence, depth and severity of food insecurity and nutrition insecurity are also much higher in rural India than that of urban India. A significant portion of food secure households are nutritionally insecure.

Assignment

1. What do you mean by GHI? Briefly explain the components of GHI . (5)
2. What is the trends of GHI of India? What is position of India in respect of GHI? (2)
3. Define food security. (2)
4. What is AAA Approach of Food Security? Specify its dimensions and indicators. (5)
5. State FGT measure of the Status of Food Insecurity. (2)
6. Explain the salient features of the status of food insecurity in India. (5)
7. Define Nutrition security. (2)
8. State FGT measure of the Status of Nutrition Insecurity. (2)
9. Explain the salient features of the status of nutrition insecurity in India (5)
10. Briefly explain the status of nutrition insecurity in relation to the status of food insecurity. (5)