

Levels and Predictors of Experiential Household Food Insecurity Among Urban Poor of North India

10th International Conference on Urban Health Belo Horizonte, November 2, 2011

Siddharth Agarwal, Vani Sethi, Mark Nord*

Urban Health Resource Centre India , * Economic Research Service, U.S.D.A
Washington DC

*Views are those of the author's and may not be attributed to the Economic Research Service
or the U.S. Department of Agriculture

1. Background:

- **One-fourth of Urban India (97 million) lives in poverty¹**
- **Undernutrition among India's urban poor is alarming²**
 - 54% under-fives suffer from chronic undernutrition
 - 38% women is acutely undernourished (Body Mass Index <18.5 Kg/m²)
- **Meager wages + double digit Food Inflation = Household food insecurity → Undernutrition³.**
 - Less than one-third urban poor have access to pre-requisites to avail food subsidy⁴

1 National Population Policy (2000).

2 UHRC, 2008. Key results from the re-analysis of NFHS-3, 2005-06 data by wealth index quartiles. New Delhi: UHRC

3 Black et al. Maternal and child undernutrition: global and regional exposures and health consequences. Lancet 2008; 371:243-60.

4 PBI Gol 2008

1. Background (Contd/..)

- **Experiential Household Food Insecurity (HFI) is measured through Questionnaire Method which captures:**
 - Self-reported HFI experience^{1,2,3}
 - “Inability to Access Food” owing to poverty.
- **Short-form (6-item) HFI Questionnaire³ originally developed by USDA. This is valid for diverse settings, simple to administer and captures essential elements of other HFI questionnaires (18-item/FANTA).**
- **No large-scale data on experiential HFI in urban poor**

1 Carlson SJ, Andrews MS, Bickel GW. J Nutr 1999;129:S510–S516.

2 Hamilton WL, Cook JT, Thompson WW, et al. US Dept of Agriculture, Food and Consumer Service; September, 1997.

3 Blumberg SJ, Bialostosky K, Hamilton WL, et al. Am J Public Health 1999;89:1231–1234.

2. Study Objective:

- **Assess experiential HFI among slum residents of a City (over a million population) in North India**
- **Identify HFI predictors**
- **Test the questionnaire's internal validity & reliability**

3. Methodology:

- **Household-based cross-sectional study (Oct'07-Mar'08)**
- **75 randomly selected slums of Meerut city (1.7 million population; 0.65 million slum population)**
- **40,016 married reproductive aged women**
- **The 6-item short-form questionnaire¹ was used with two adaptations**
- **Statistical Analysis:**
 - HFI predictors - binary logistic regression [enter method].
 - Internal reliability & validity - Cronbach's α and Rasch-based item fit statistics.

¹Blumberg SJ, Bialostosky K, Hamilton WL, et al. Am J Public Health 1999;89:1231-1234.

3. Methodology:

- In last 12 months, due to lack of money, did you or any adult family member experience the following -

Items in Standard Short-form (6-item) Questionnaire ^{1*}	Adaptation
Could not eat a nutritious meal /variety in meal (sometimes/often/never)	✓
Bought food did not last for purchased period (sometimes/often/never)	✓
Cut or skip meal (Yes/No)	Merged & then ✓
Cut or skip meal - How often (sometimes/often/never)	
Ate less than felt was needed (sometimes/often/never)	X
Slept Hungry (Yes/No)	✓

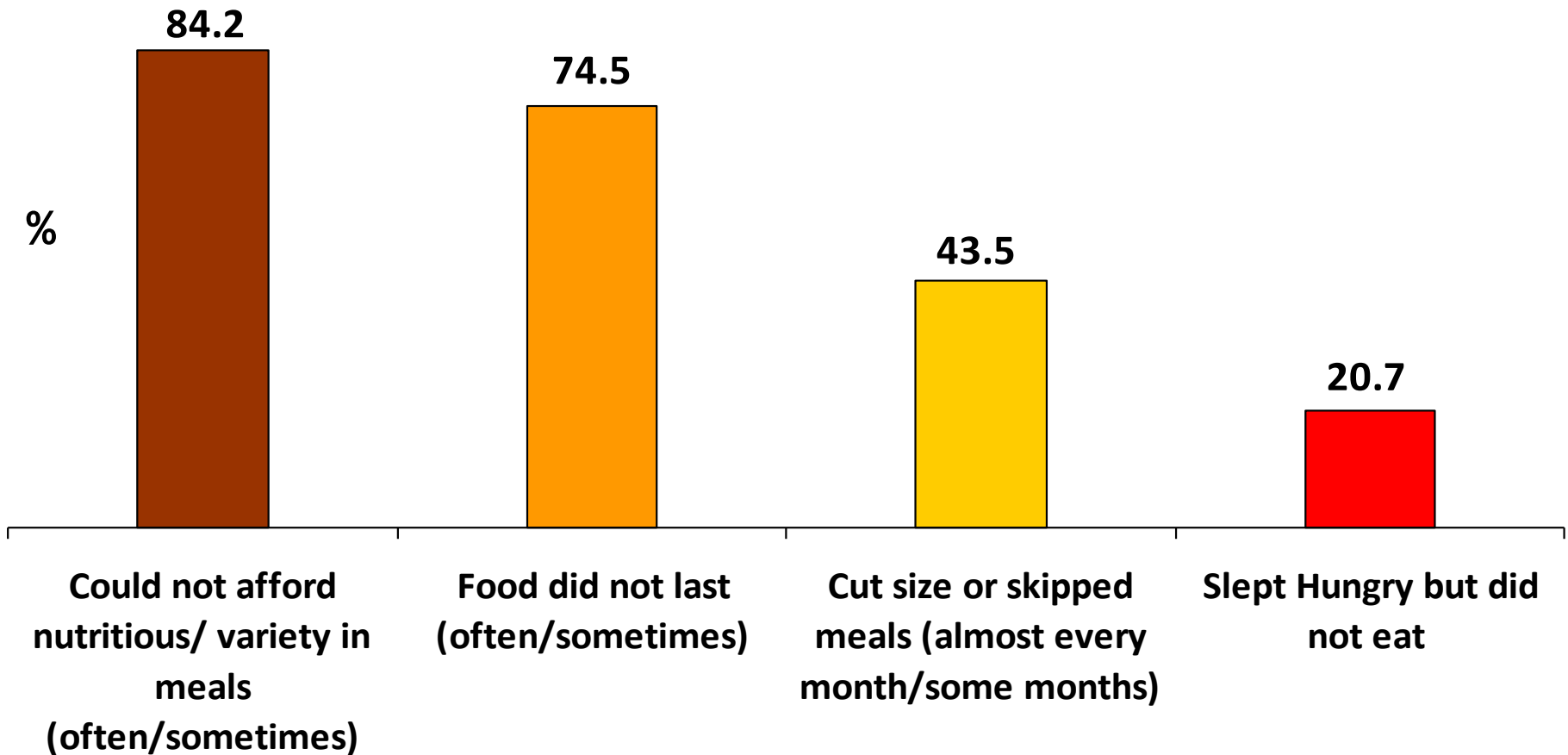
- Experiencing ≥ 2 Items = food Insecurity
- Experiencing ≥ 3 Items = Hunger

Sometimes/some months = 6 to 12 times in past year

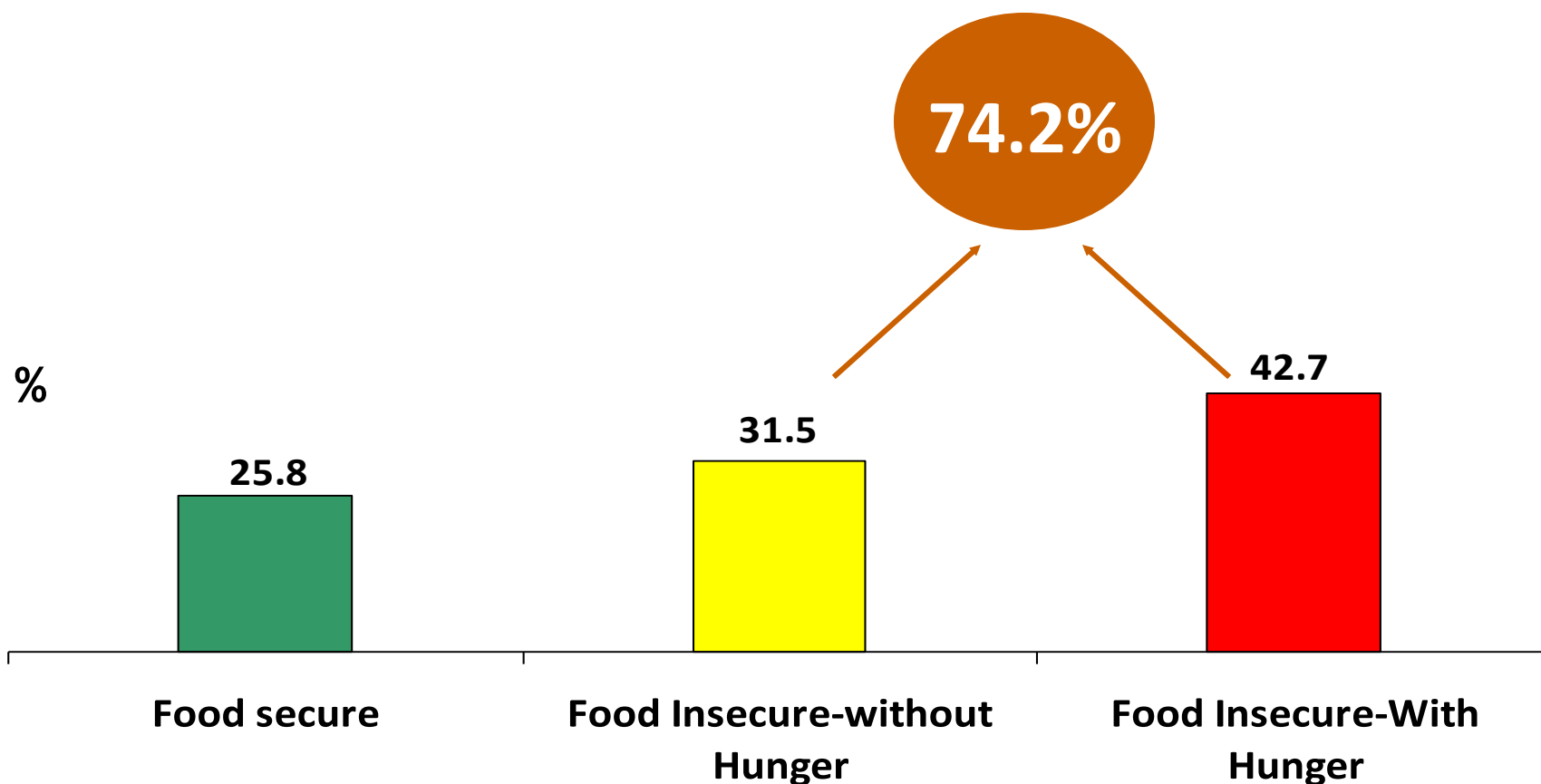
Often/almost every month= few times in most months or almost every month

4. Results

4.1 Affirmative Responses to Individual Items



4.2 Levels of Hunger & Food Insecurity:



Food Secure: None or one affirmative response

Food Insecure-without Hunger: Two or more affirmative responses

Food Insecure-with Hunger: Three or four affirmative responses

4.3. Predictors of Hunger & Food Insecurity

Independent variables	Adjusted Odds Ratio* (95% C.I.)	
	Hunger	Food Insecurity
Caste/Social Group		
Others	0.00	0.00
Lower Social Group [#]	1.3 (1.2-1.4) ↑	1.5 (1.4-1.6) ↑
Wealth Quintile		
Top two	0.00	0.00
Middle	2.1 (2.0-2.2)	2.7 (2.6-2.9)
Bottom two	4.1 (3.9-4.3) ↑	5.1 (4.8-5.5) ↑
No. of children less than 6 years		
2 or less	0.00	0.00
3 or more	1.0 (0.9-1.1)	1.0 (0.9-1.1)
No. of people in household		
4 or less	0.00	0.00
5-8	1.2 (1.1-1.3)	1.3 (1.2-1.3)
9 or more	1.3 (1.2-1.4) ↑	1.3 (1.2-1.4) ↑

[#] schedule caste/other backward caste

* adjusted for religion caste, wealth quintile, no. of children less than six years and no. of people in household

4.4. Internal Reliability & Validity of 4-item Scale:

Item	Point biserial correlation	Item Severity Parameter (SE)*	Infit Statistics*	Outfit Statistics*
Could not afford to eat nutritious meal	0.46	-3.37 (0.03)	1.11	11.22
Food did not last and no money for more	0.58	-1.75 (0.03)	0.60	1.11
Cut meal size or skipped meal	0.59	1.14 (0.03)	0.52	0.63
Slept Hungry but did not eat	0.43	3.98 (0.04)	1.03	6.43
Scale's Overall Reliability Coefficient (Cronbach Alpha (α)) - 0.725				

*Item severity parameters and fit statistics were calculated using SAS-based programs developed by Mark Nord to implement Conditional Maximum Likelihood (CML) estimation methods.

5. Conclusions:

1. HFI was 75% in slums. HFI → 4 times higher in bottom two wealth quintiles. Need to:

- Link them to Poverty Alleviation Schemes
- Improve their access to Food Subsidy/Feeding Programs

2. The 4 item HFI Scale has a good internal reliability & moderate internal validity.

- To improve validity → expand back to 6 or 8 items
 - Split cut meal & skip meal items & their 'how often' options
 - Retain/revise 'eat less' item about
 - In addition to often, sometimes, add "rarely" category
 - 6 questions easily incorporated in nutrition surveys.
-