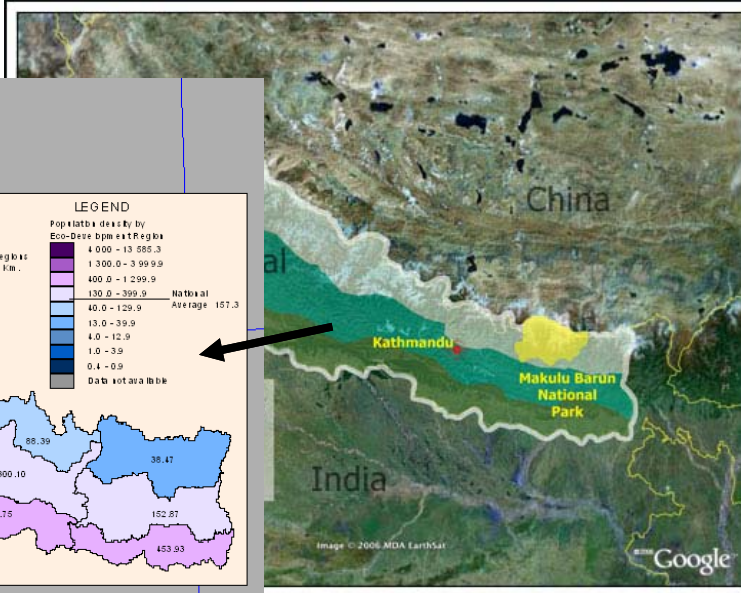
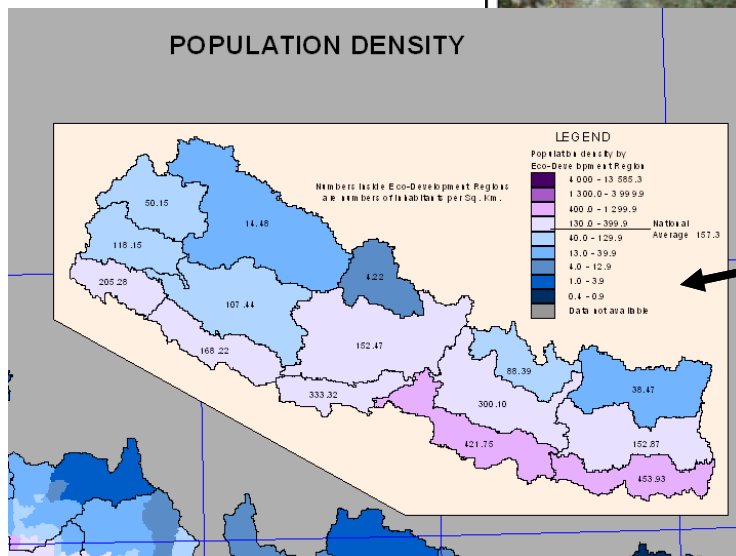


# Factors associated with undernutrition & household food security (Findings from the PoSHAN Community Studies) Nutrition Innovation Lab- Asia (Nepal)

SWETHA MANOHAR  
JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH



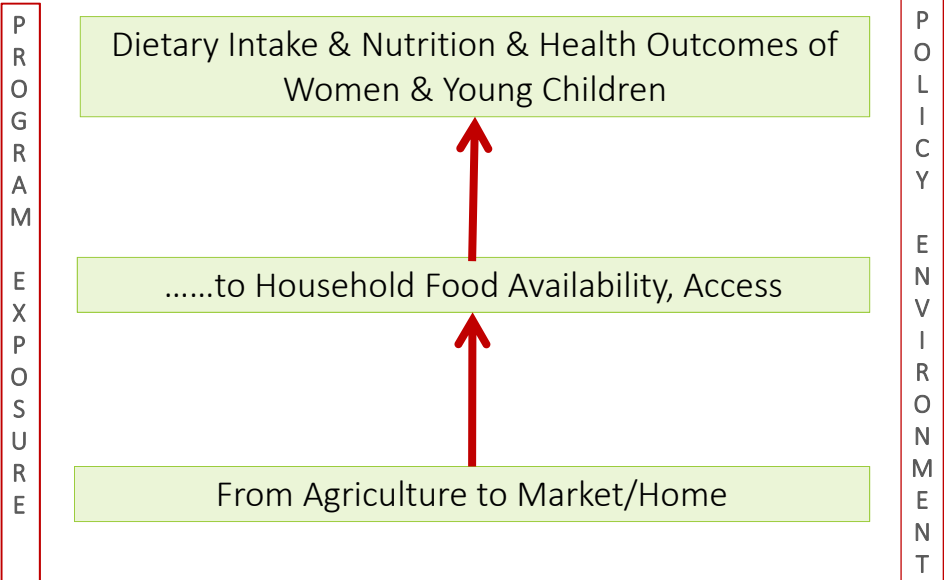
## Nepal



© Google Images & CBS Nepal, 2012



## Agriculture to Nutrition Pathways



## Design & Methods

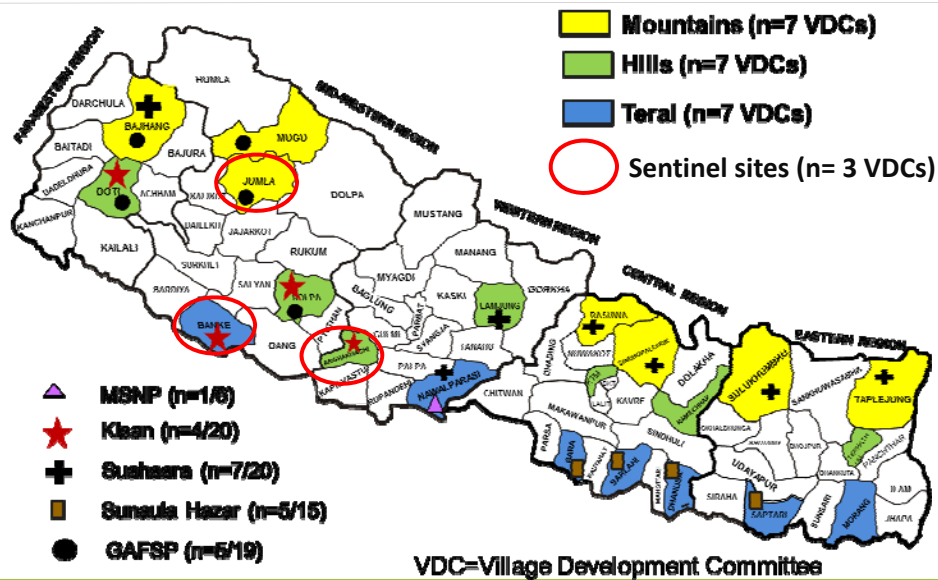
### Design

- Longitudinal, observational study
- Representative, annual panel surveys (21 sites) balanced across mountains, hills, flatlands)
- Conduct seasonal data collection in a nested sample (3 sites)
- Duration: 3 years (2013-2015)
- Eligible households (N~5000): < 5 children, newly married women
- Major outcomes of interest: nutrition status, HH food security, dietary patterns

### Measurements

- Community: food prices, infrastructure
- Household: food security, income, expenditure, ag production & practices, program participation
- Individual: Dietary patterns, nutritional status, anemia status, access to health & nutrition services, morbidity, IYCF, family planning, knowledge of key health and nutrition messages

## Map of PoSHAN Study Sites

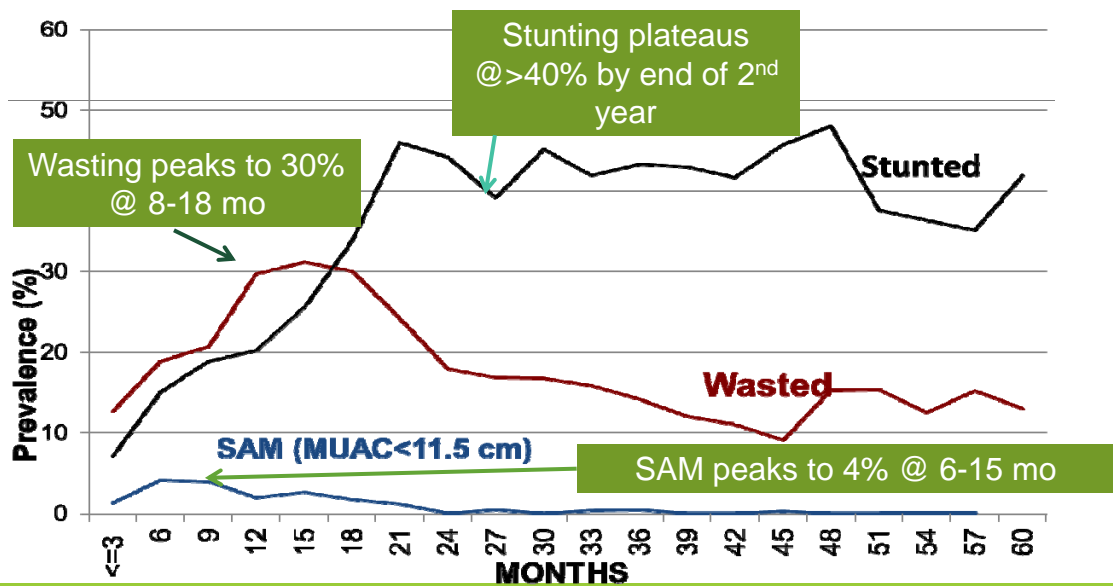


## Undernutrition in Under- Five Children

	2013			2014		
	Mountains (N=932)	Hills (N=1264)	Terai (N=3111)	Mountains (N=826)	Hills (N=1307)	Terai (N=3276)
Stunting*	37.1	36.2	34.8	39.1	36.9	37.2
Wasting*	8.3	10.8	23.3	7.28	8.79	21.56
Underweight*	26	29.1	39.1	25.7	27.1	39.8

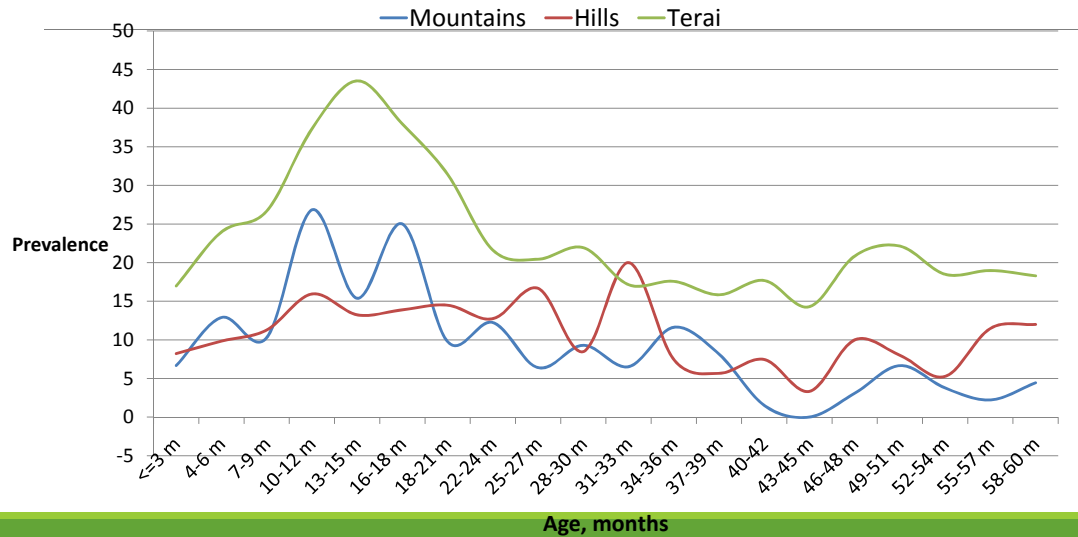
\* < -2 SD

## Under nutrition in under-five children varies by age



Klemm et al, unpublished

Under nutrition in under-five children varies by age AND by agro ecology. Wasting 2x higher in the plains



Is Household Food Insecurity (HFI) associated with child undernutrition in 6- 59.9 month olds in Nepal?

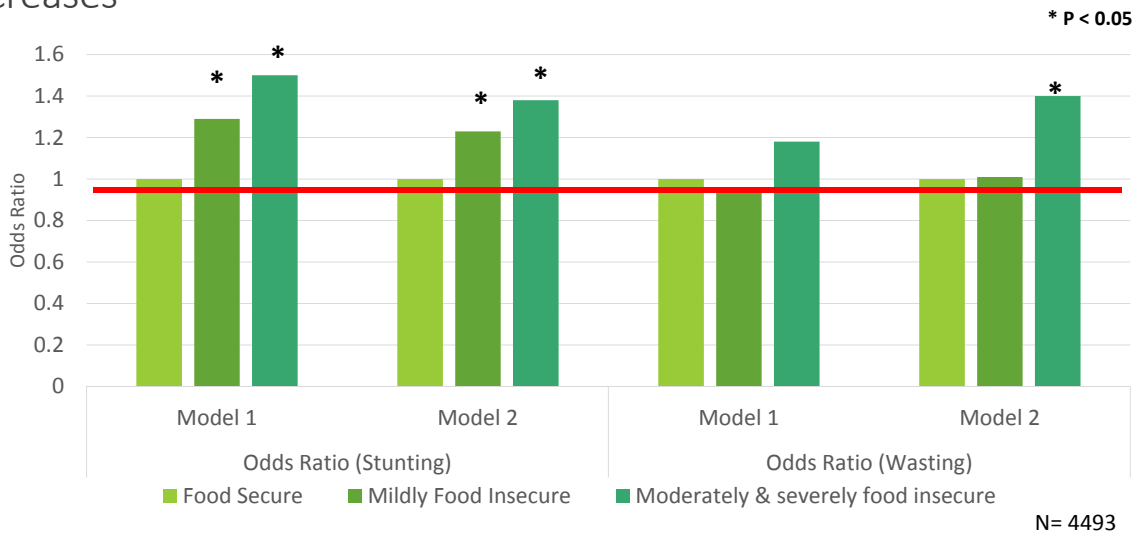
## Sample characteristics: individual

<b>Child Characteristics (6-59.9 months)</b>	<b>N= 4943</b>	<b>Mothers' characteristics</b>	<b>N= 4929</b>
Age in months, mean (SD)	33.0 (15.6)	Age in years, mean (SD)	27.3 (6.7)
Sex, %		Education, %	
Male	52.6	No schooling (0 years)	58.4
Female	47.4	Primary schooling (1-5 years)	12
Child Dietary Diversity Score, mean (SD)	5.3 (1.7)	High School/SLC (6-10 years)	21
Consumed > 4 food groups, %	71.8	College or higher (>10 years)	8.6
Hemoglobin, g/dL, mean (SD)	10.5 (1.3)	Short stature: <145 cm, %	11.9
Acute Respiratory Illness ≤ 30 days, %	17.1		
Diarrhea ≤past 30 days, %	29.9		

## Sample characteristics: household

<b>Household characteristics</b>	<b>N=3665</b>	<b>Caste, contd. [%]</b>	
Head of Household, %		Dalit	17.4
Male	72.4	Newar	2.2
Female	27.6	Janjati	20.3
Household size, mean (SD)	5.8 (2.6)	Others	5.4
Wealth index, %		Household Food Insecurity, %	
Lowest quintile	21.1	None	59.1
Second quintile	20.5	Mild	18.4
Middle quintile	20.1	Moderate	16.2
Fourth quintile	19.1	Severe	6.3
Highest quintile	19.1	Agro ecological Zone, %	
Caste, %		Mountains	18.4
Brahmin or Chettri	24.7	Hills	26.1
Other terai	30	Terai	55.5

### Odds of stunting and wasting increases (but not consistently) as HFI increases

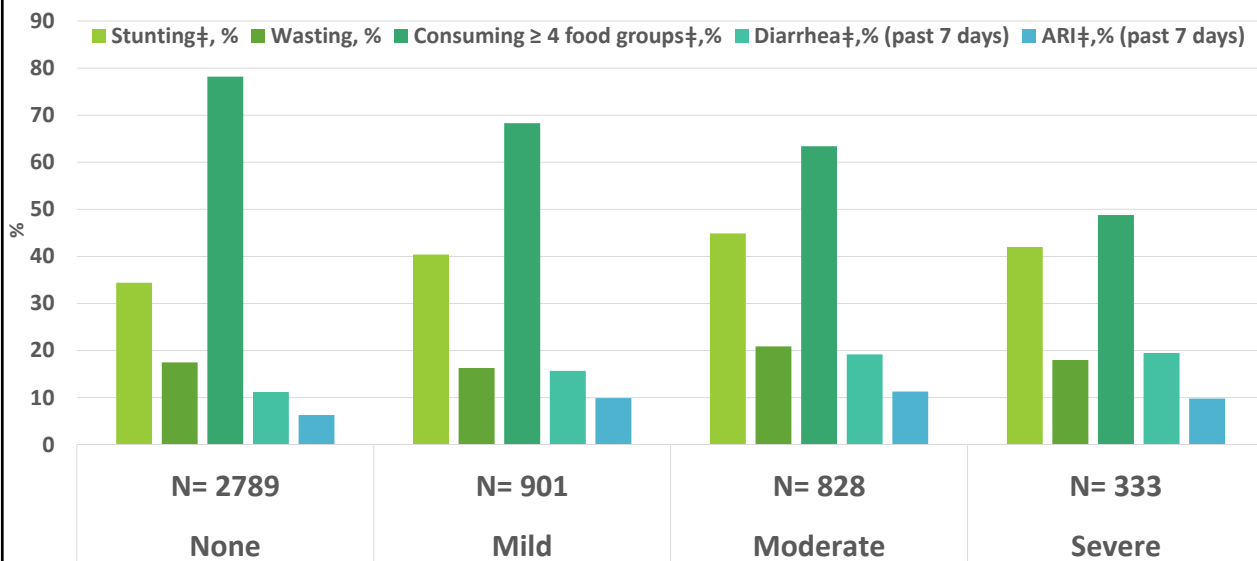


Model 1 = Unadjusted

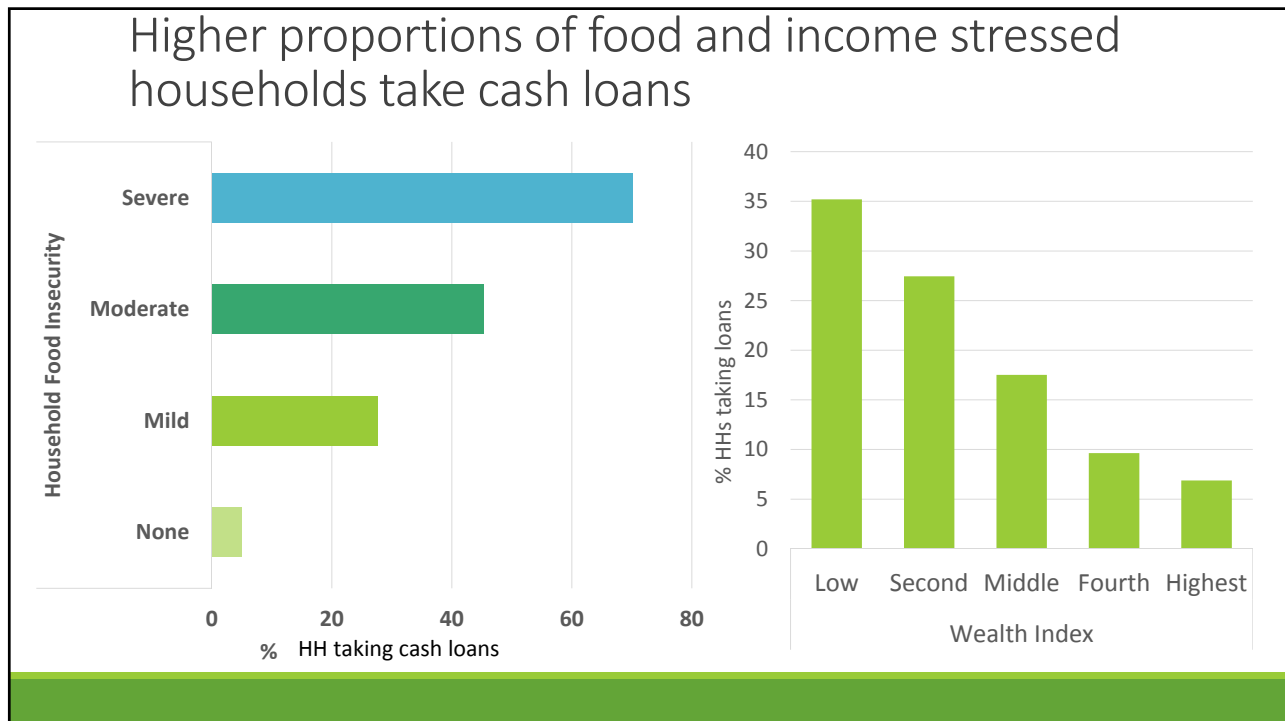
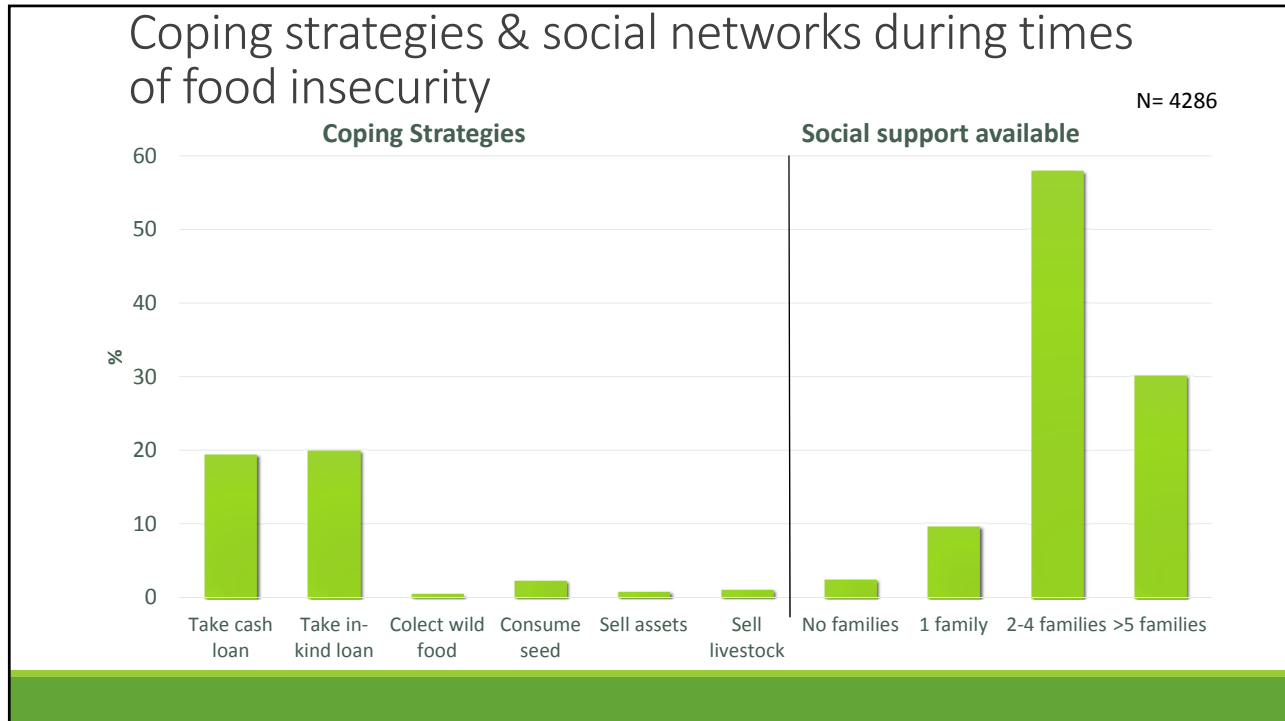
Model 2 = Adjusted household size & region, maternal age & height, child age, sex, ARI, diarrhea

Manohar et al. unpublished

### Prevalence of child stunting and recent history of diarrhea & ARI increase with severity of HFI



HFIAS





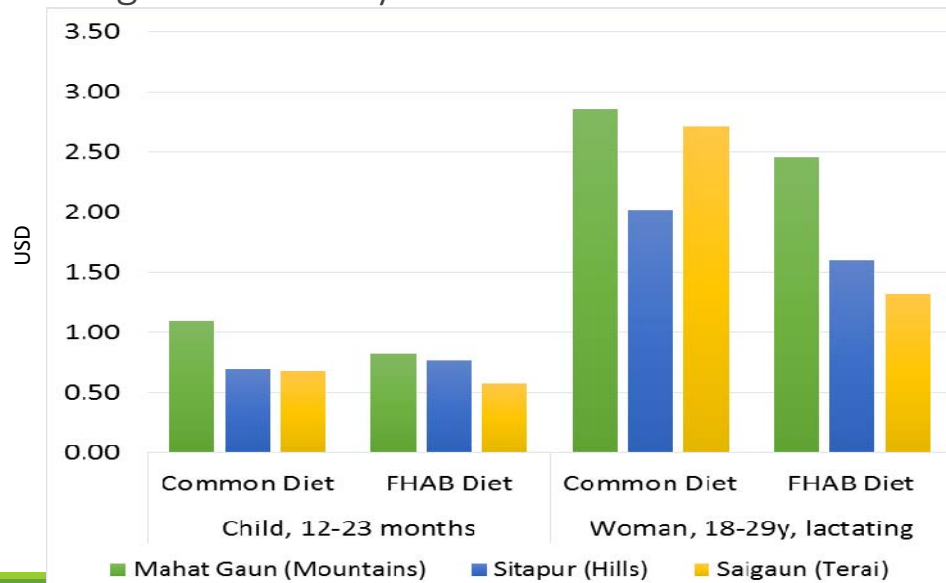
## Reports of seasonal food insecurity by agro ecological zone



\_\_\_\_\_

If you don't have food available at home, you need to buy it....what does that cost? And how does that differ based on where one lives?

How affordable the most nutritious diets that people are actually consuming vs. what they could consume?



Cost of Diet Tool, SC  
Biehl, et. al, unpublished

## Key Messages

### TARGETTING MATTERS

- The burden of under nutrition, specifically wasting and underweight in under- five is children & HFI is significantly different across agro ecology.
- The most food and income-stressed household are more likely to resort cash & in-kind loans
- As HFI worsens, the odds of stunting and wasting increase
- As HFI worsens, child dietary diversity decreases - creating access and promoting cheap, available and diverse diets during these time is important
- Even during “leaner” seasons, affordable nutritious diets are available

## Key Messages *contd.*

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- This type of ongoing agriculture – nutrition research system and infrastructure can provide insights on national trends in nutritional status, diet and food security and its relationship with nutrition-specific and nutrition sensitive factors which can inform program and policies to retarget resources and bridge policy and programmatic gaps

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