



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

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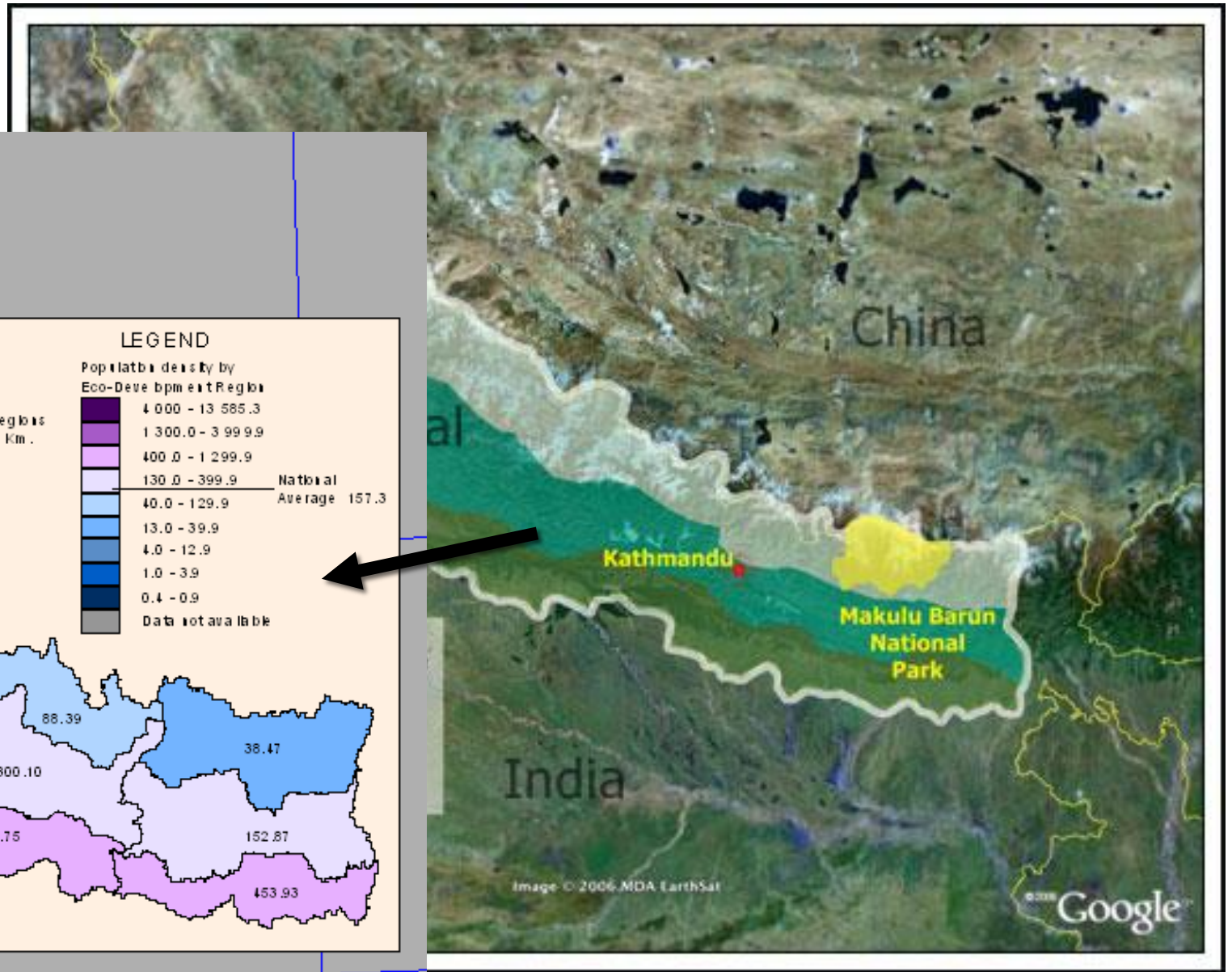
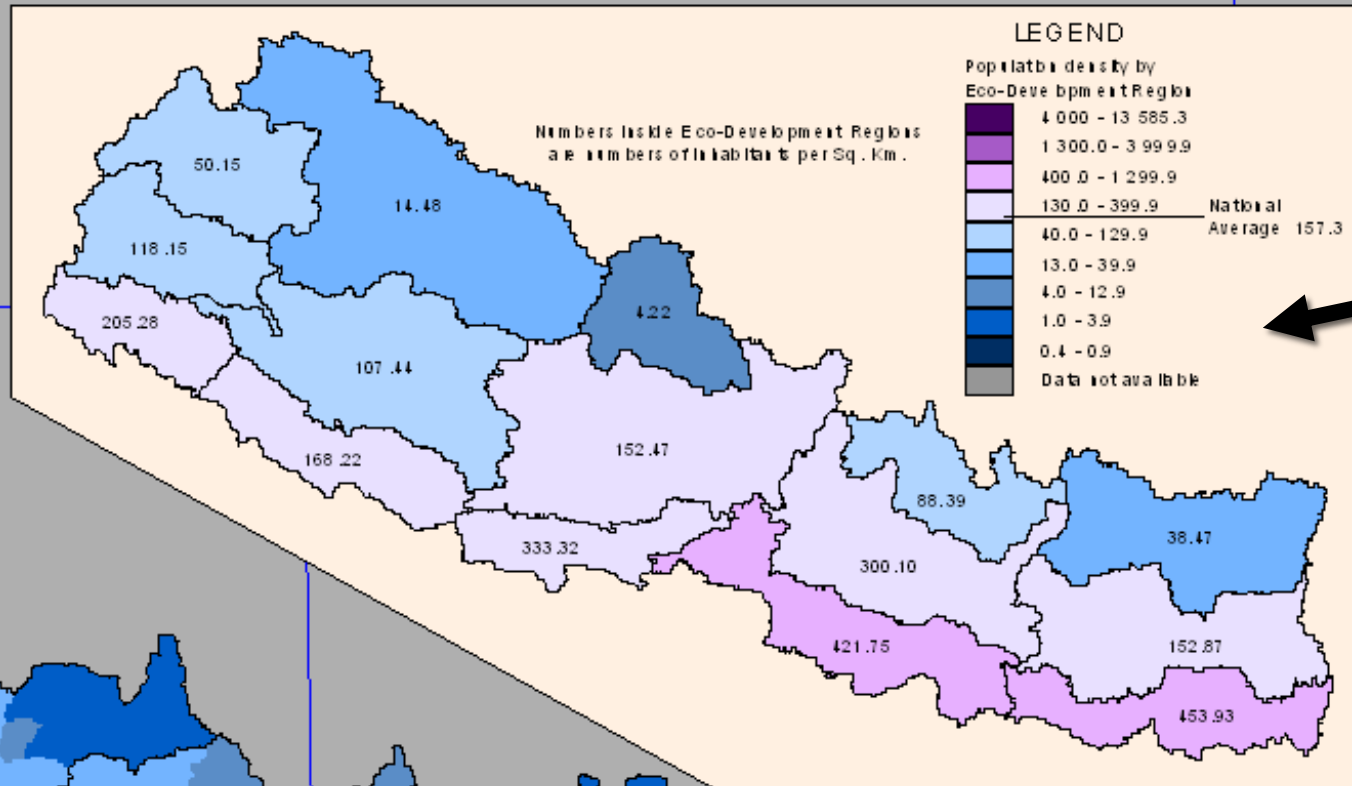
SWETHA MANOHAR

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH



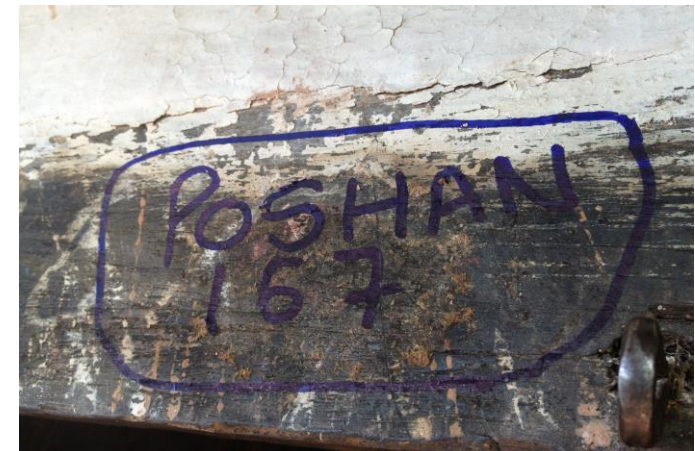
# Nepal

## POPULATION DENSITY





# PoSHAN Community Studies



# Agriculture to Nutrition Pathways

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Dietary Intake & Nutrition & Health Outcomes of  
Women & Young Children

.....to Household Food Availability, Access

From Agriculture to Market/Home

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# Design & Methods

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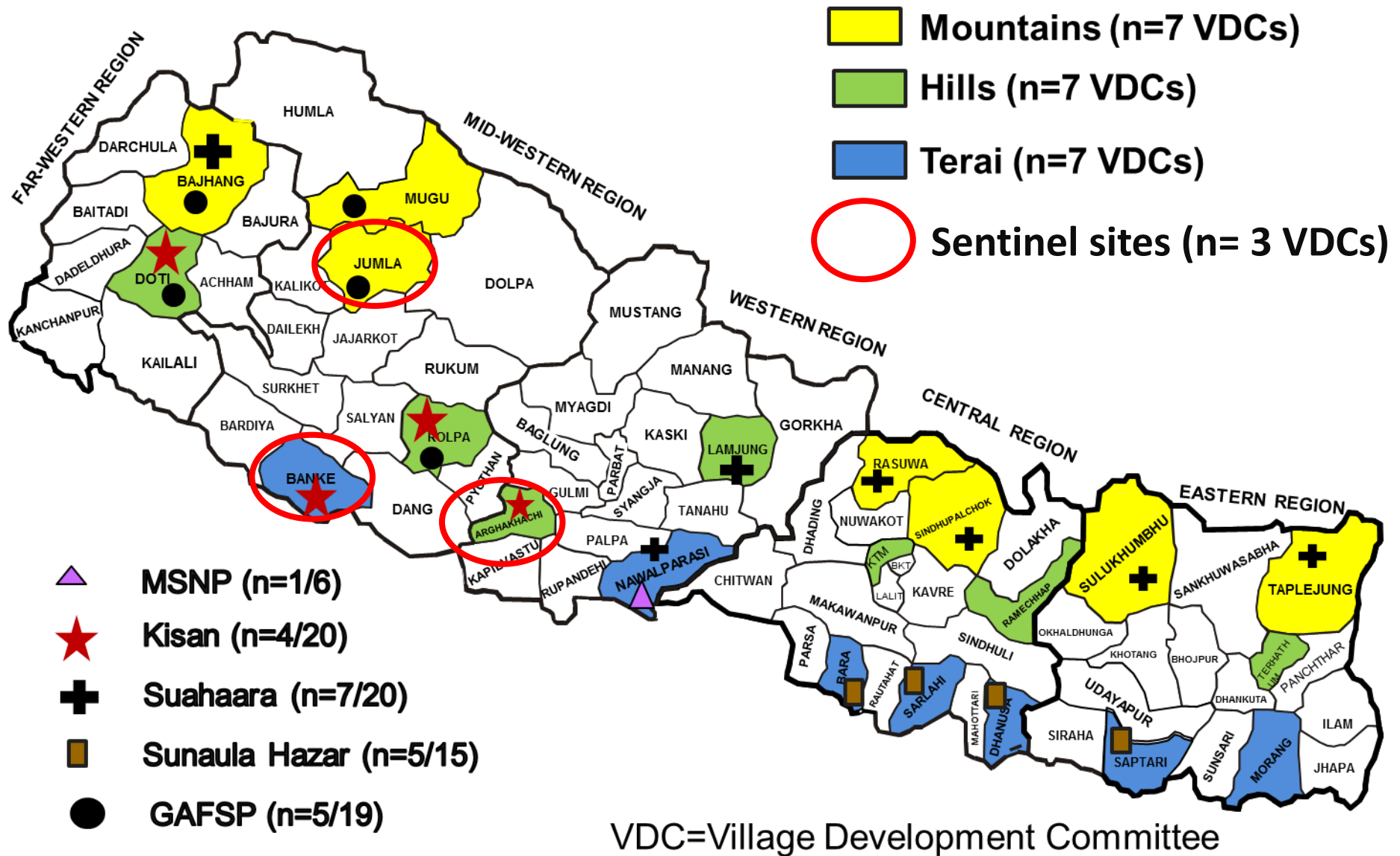
## Design

- 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

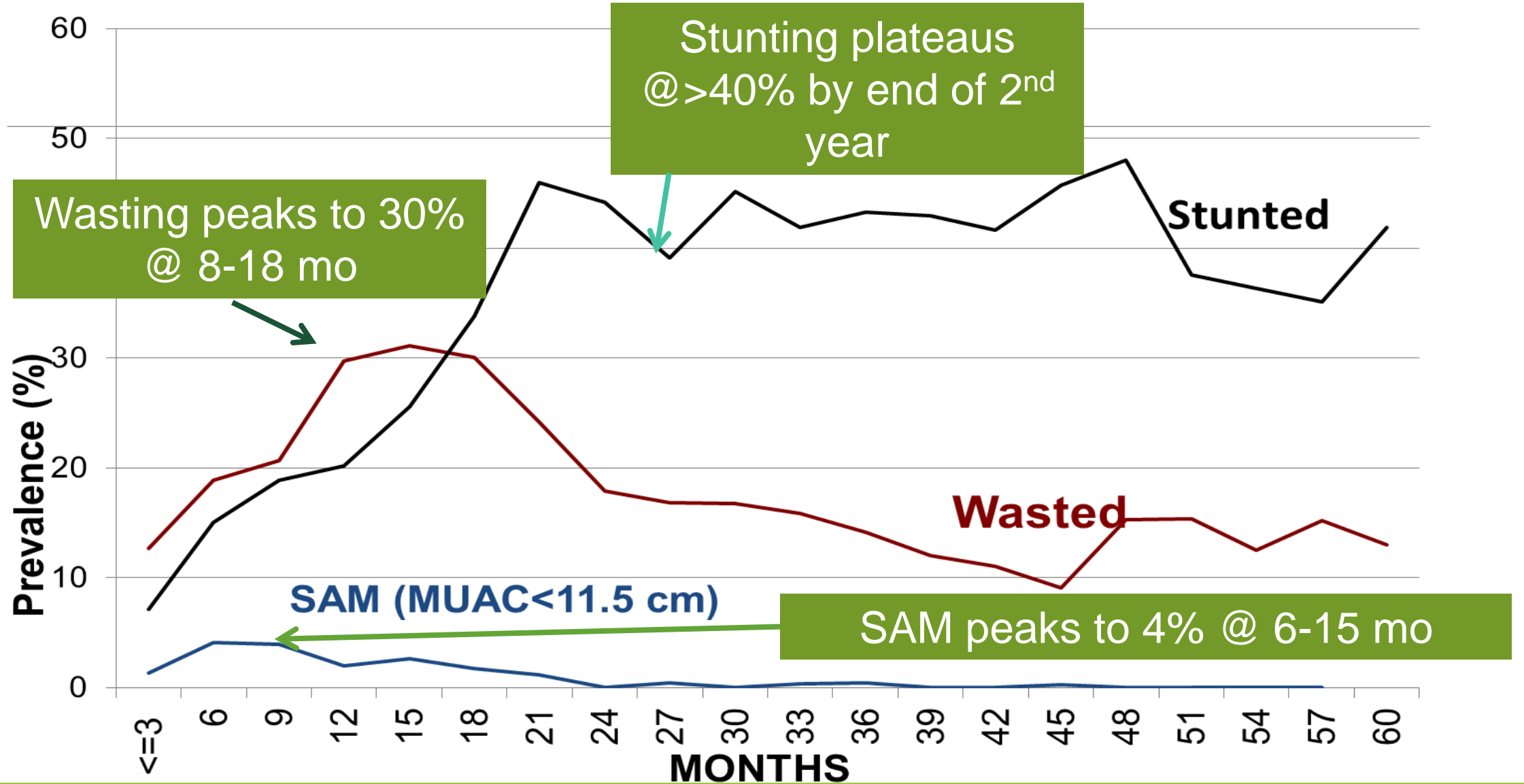


# Undernutrition in Under- Five Children

	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

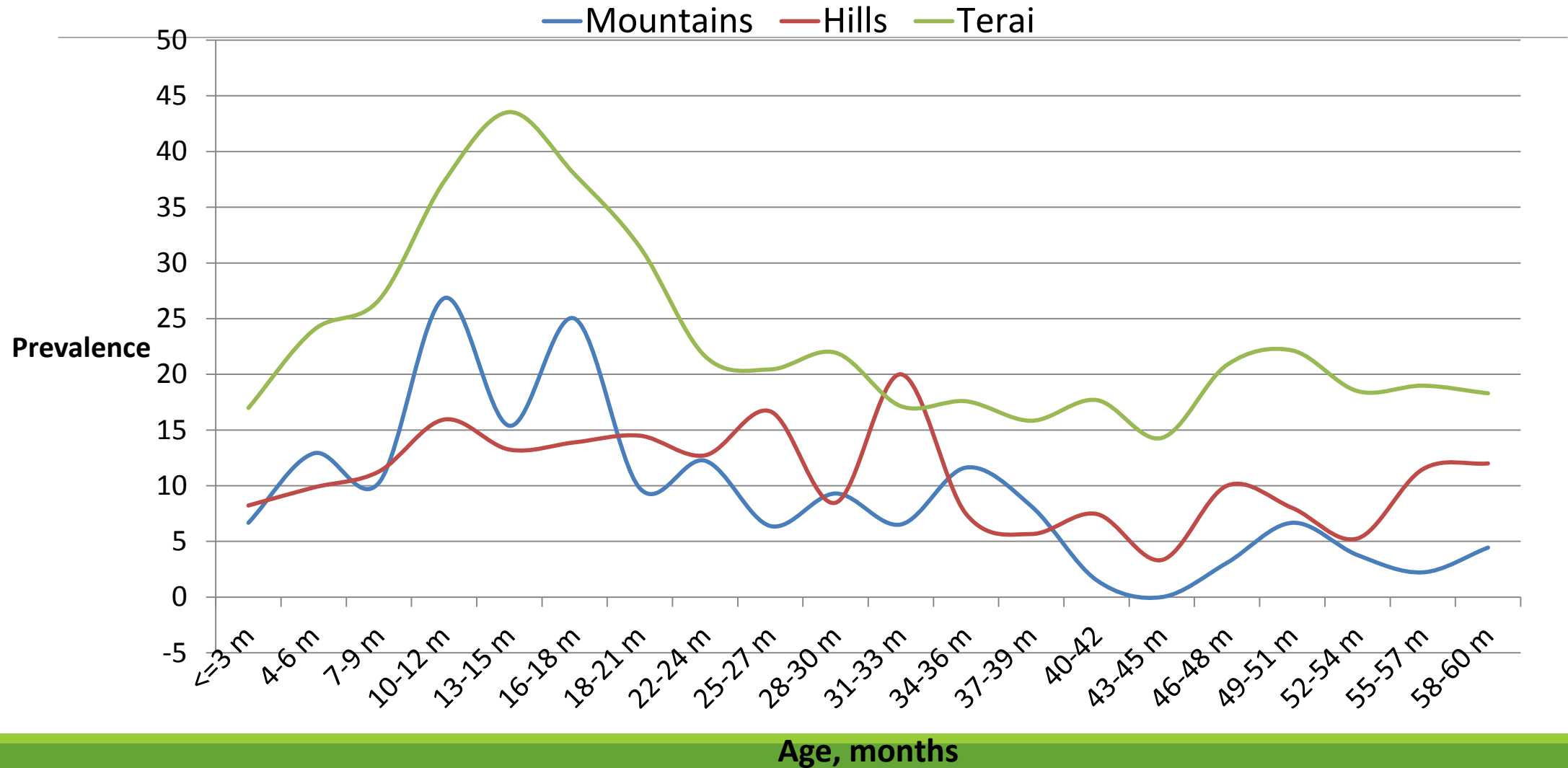
\* < -2 SD

# Under nutrition in under-five children varies by age





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



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

# Sample characteristics: individual

<b>Child Characteristics (6-59.9 mos)</b>	<b>N= 4943</b>
Age, months [mean (SD)]	33.0 (15.6)
Sex [%]	
Male	52.6
Female	47.4
Child Dietary Diversity Score [mean (SD)]	5.3 (1.7)
Consumed > 4 food groups [%]	71.8
Hemoglobin, g/dL [mean (SD), n=835]	10.5 (1.3)
ARI, past 30 days [%]	17.1
Diarrhea, past 30 days [%]	29.9

<b>Mothers' characteristics</b>	<b>N= 4929</b>
Age, years [mean (SD)]	27.3 (6.7)
Education [%]	
No schooling (0 years)	58.4
Primary schooling (1-5 years)	12
High School/SLC (6-10 years)	21
College or higher (>10 years)	8.6
Short stature (<145 cm) [%]	11.9



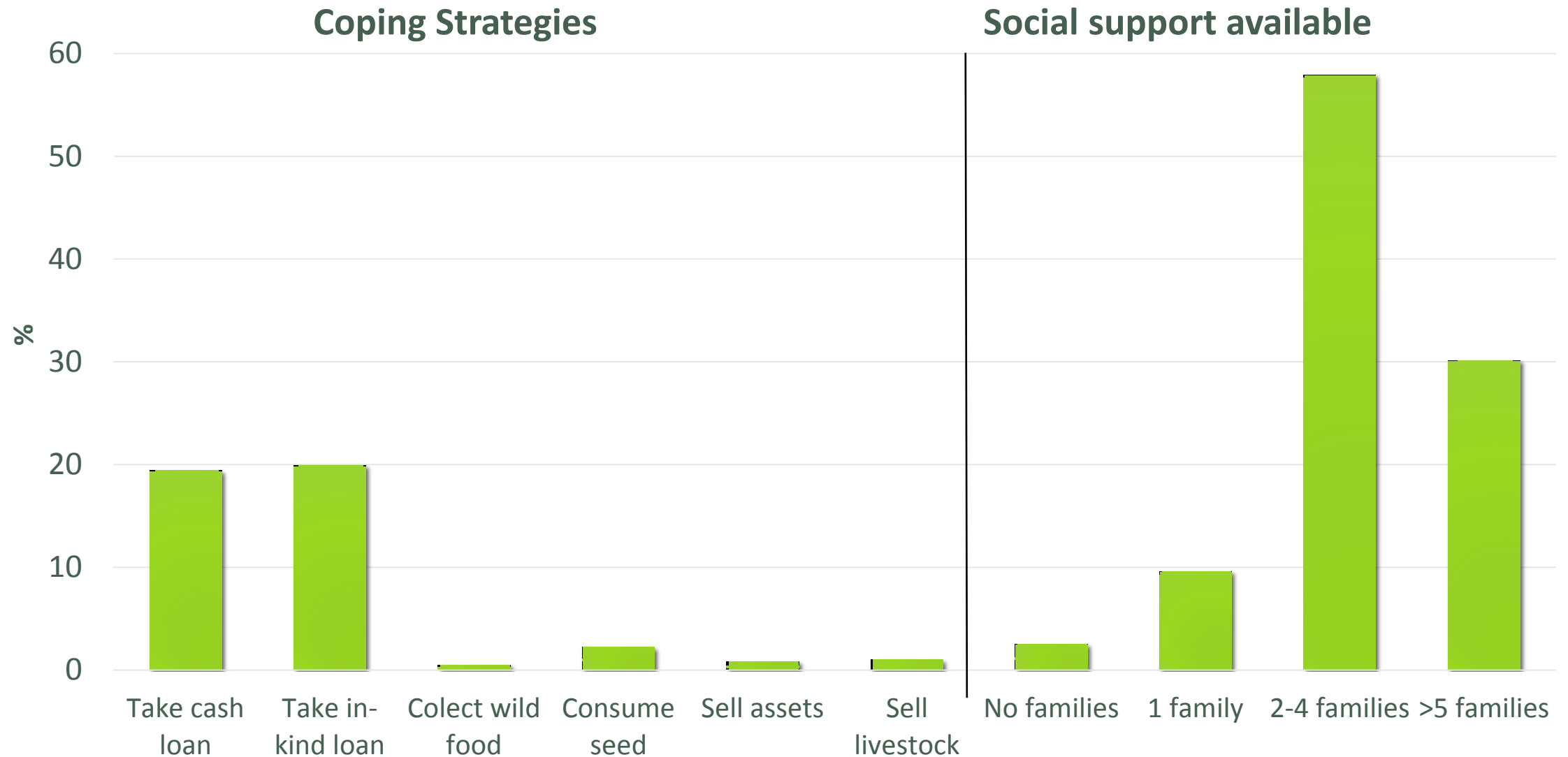
# Sample characteristics: household

<b>Household characteristics</b>	<b>N=3665</b>
Head of Household [%]	
Male	72.4
Female	27.6
Household size [mean (SD)]	5.8 (2.6)
Wealth index [%]	
Lowest quintile	21.1
Second quintile	20.5
Middle quintile	20.1
Fourth quintile	19.1
Highest quintile	19.1
Caste [%]	
Brahmin or Chettri	24.7
Other terai	30

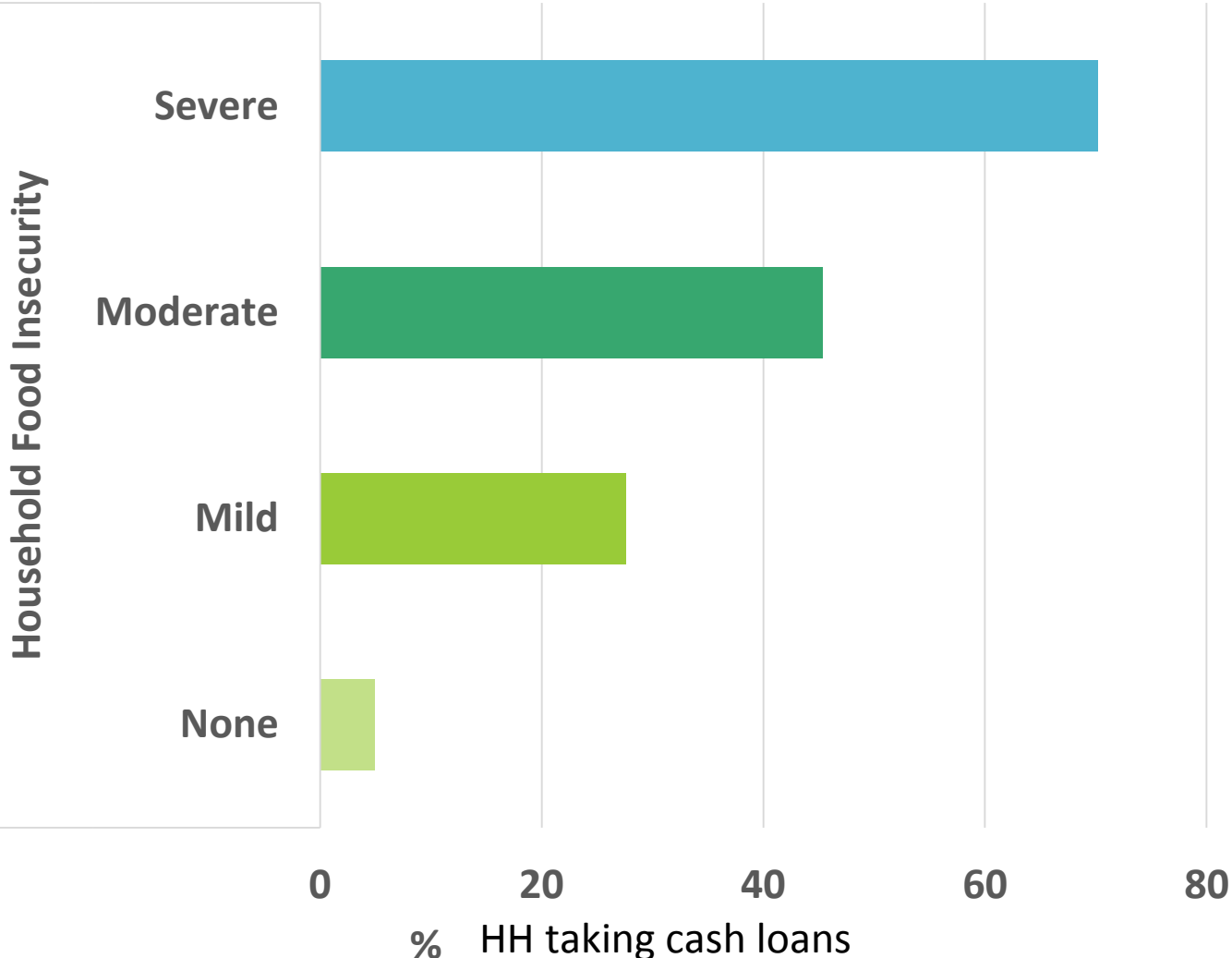
Caste, contd. [%]	
Dalit	17.4
Newar	2.2
Janjati	20.3
Others	5.4
Household Food Insecurity [%]	
None	59.1
Mild	18.4
Moderate	16.2
Severe	6.3
Agro ecological Zone [%]	
Mountains	18.4
Hills	26.1
Terai	55.5

# Coping strategies & social networks during times of food insecurity

N= 4286

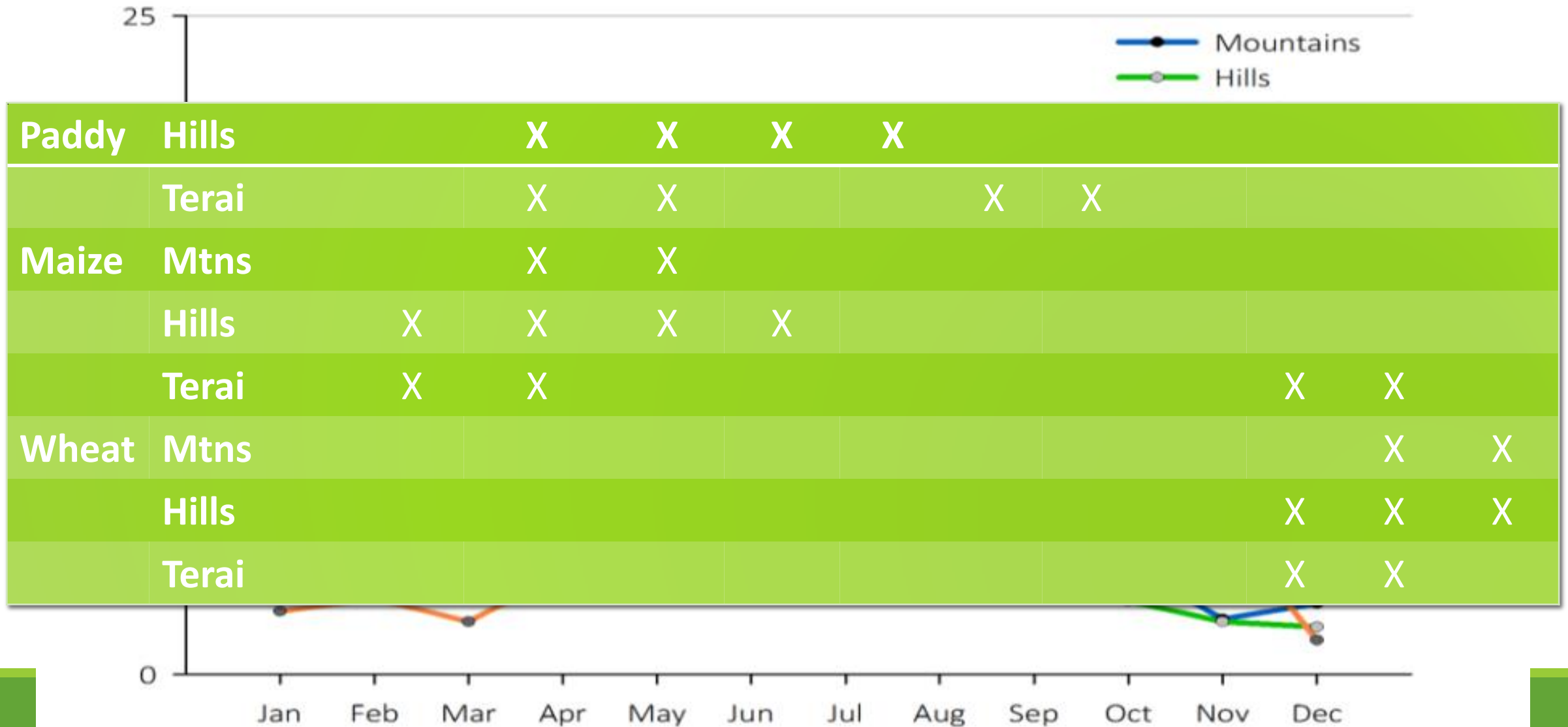


# Higher proportions of food and income stressed households take cash loans

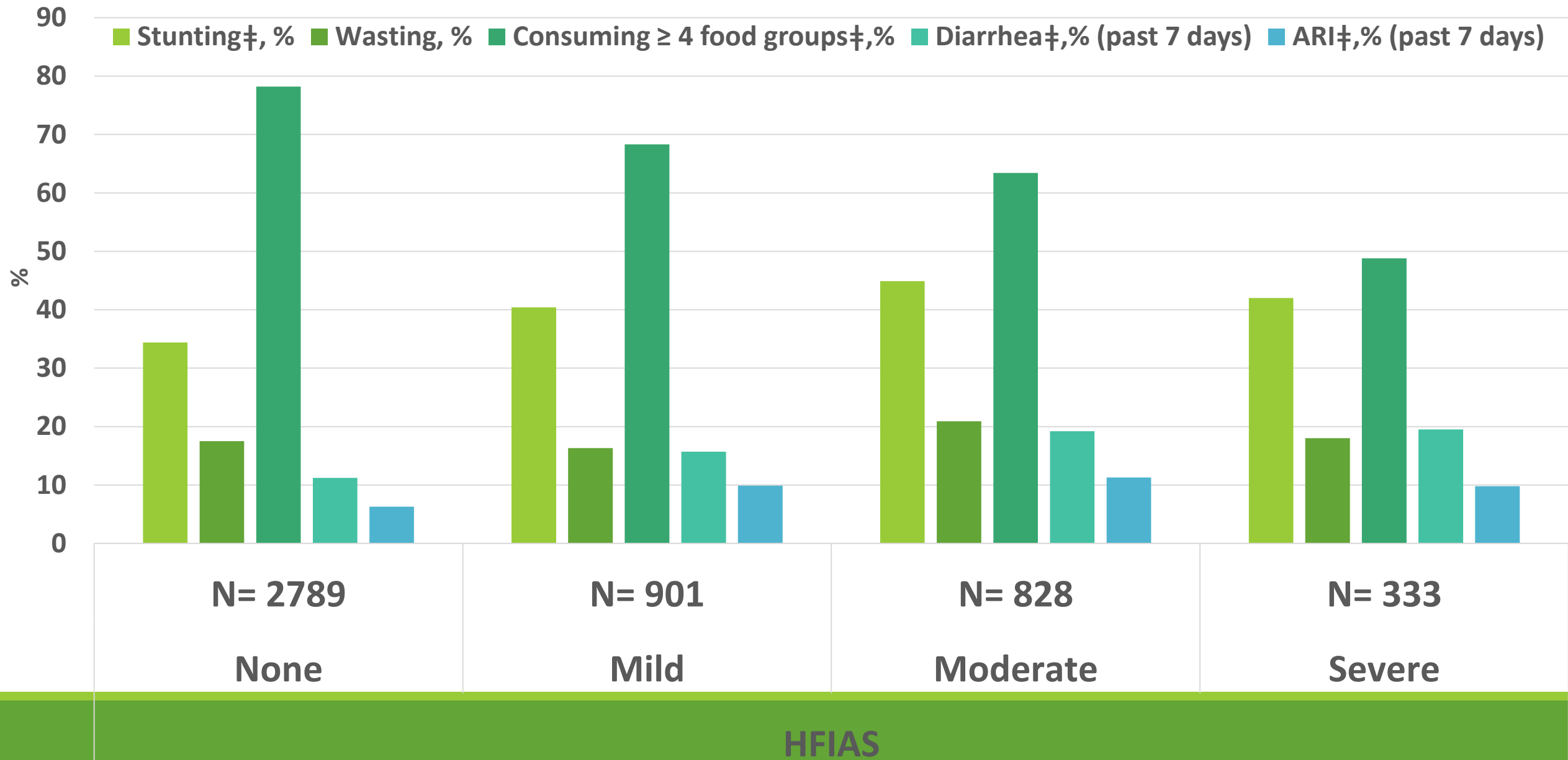




# Reports of seasonal food insecurity by agro ecological zone

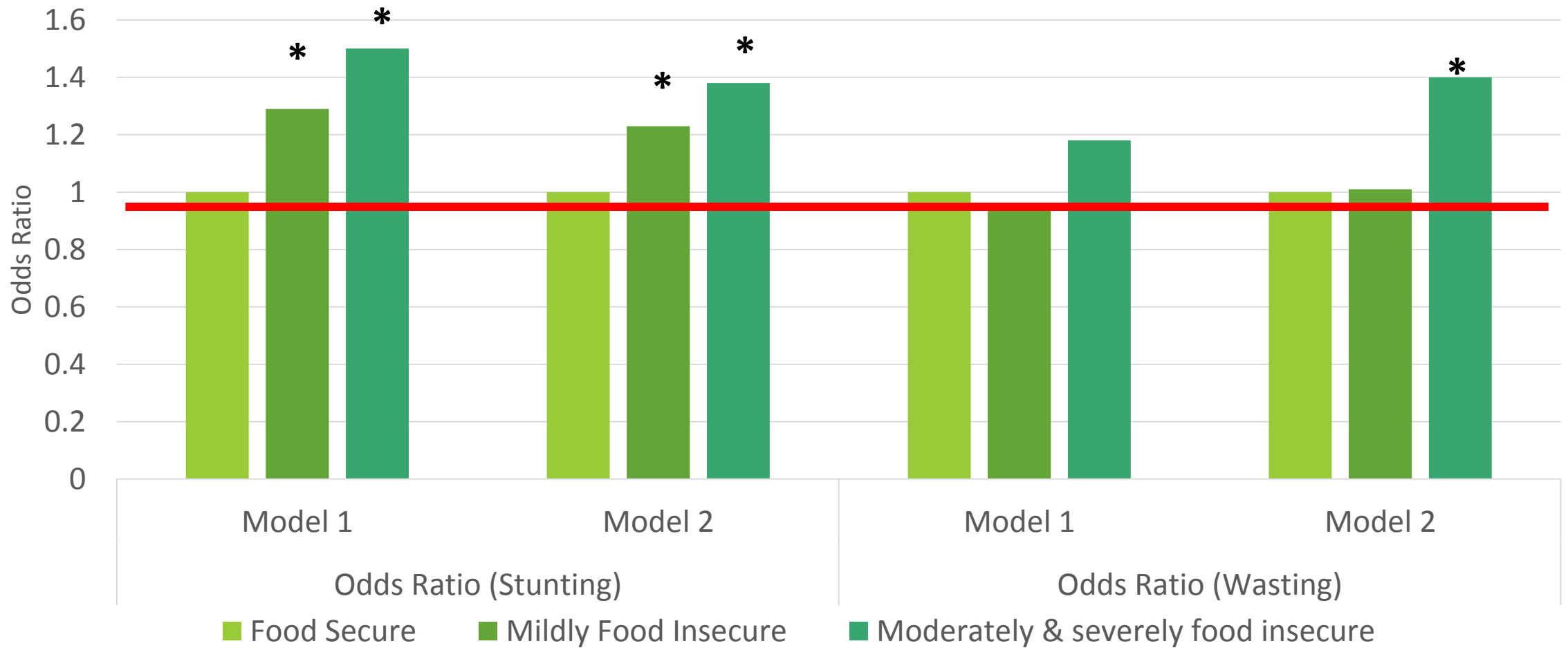


# Prevalence of child stunting and recent history of diarrhea & ARI increase with severity of HFI



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

\* P < 0.05



Model 1 = Unadjusted

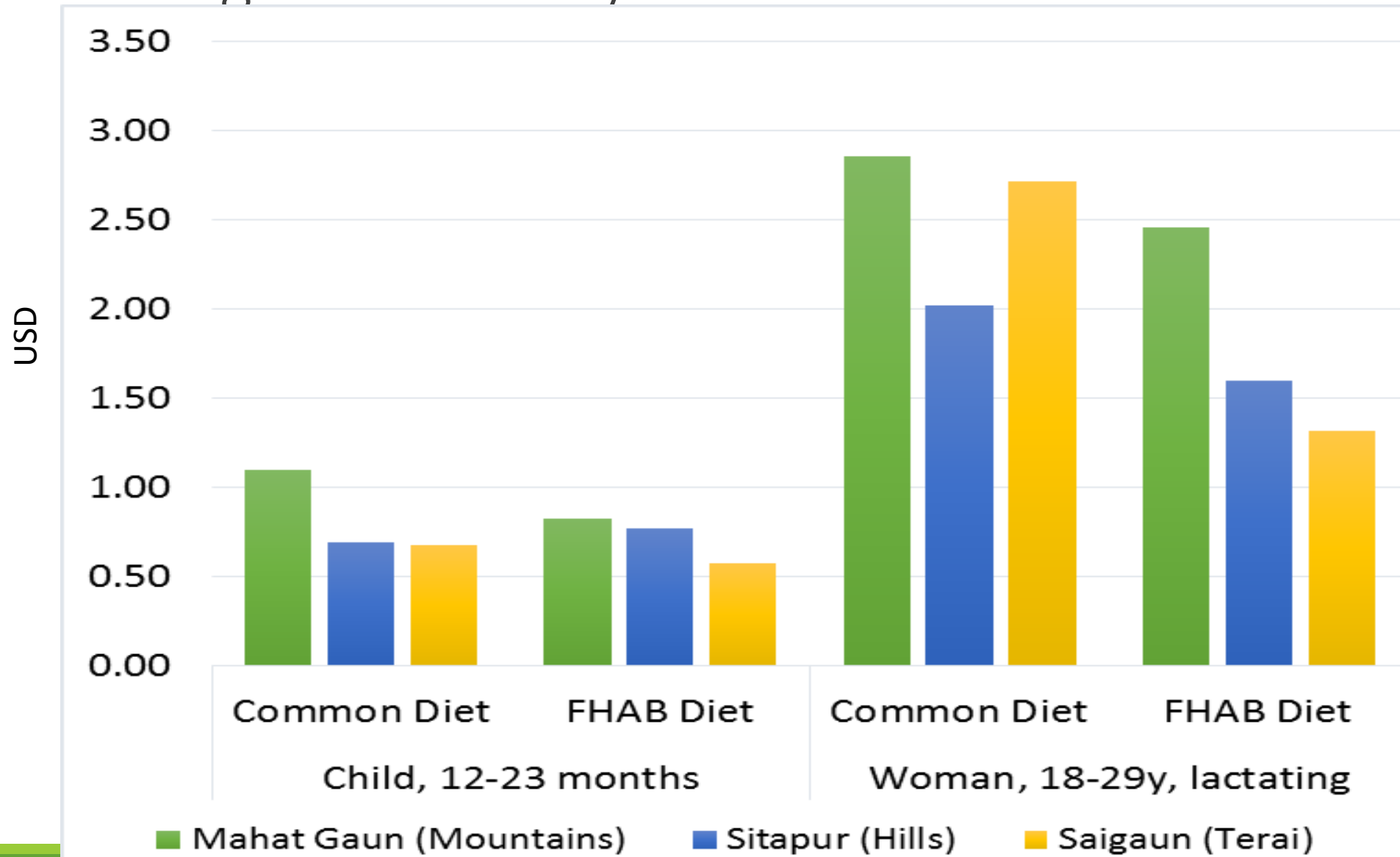
Model 2 = Adjusted household size & region, maternal age & height, child age, sex, ARI, diarrhea



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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?



# Key Messages

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## TARGETTING MATTERS

- The burden of under nutrition 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 so does stunting, wasting and recent illness in under-fives
- As HFI worsens, child dietary diversity also decreases - creating access and promoting cheap, available and diverse diets during these time is important
- Even during the lean seasons, cheaply available nutritious diets are available

## Key Messages *contd.*

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- This type of agriculture – nutrition surveillance system 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 as best possible

# Acknowledgements

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