Child Dietary Quality in Rural Nepal:
Effectiveness of a Community Development Intervention

HEIFER® INTERNATIONAL NEPAL

Tufts UNIVERSITY

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***HEIFER*'s mission**: to work with communities to end hunger and poverty (>300 projects in >30 countries)

Livestock-based approach to community development

- Income & assets
- Social capital
- Women's empowerment
- Environment
- Community ties "Passing on the Gift"

Women's self-help groups

Child nutrition, diet, & health not *directly* addressed in Heifer programming

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Does a livestock intervention* improve child dietary quality?

* in the context of holistic community development activities

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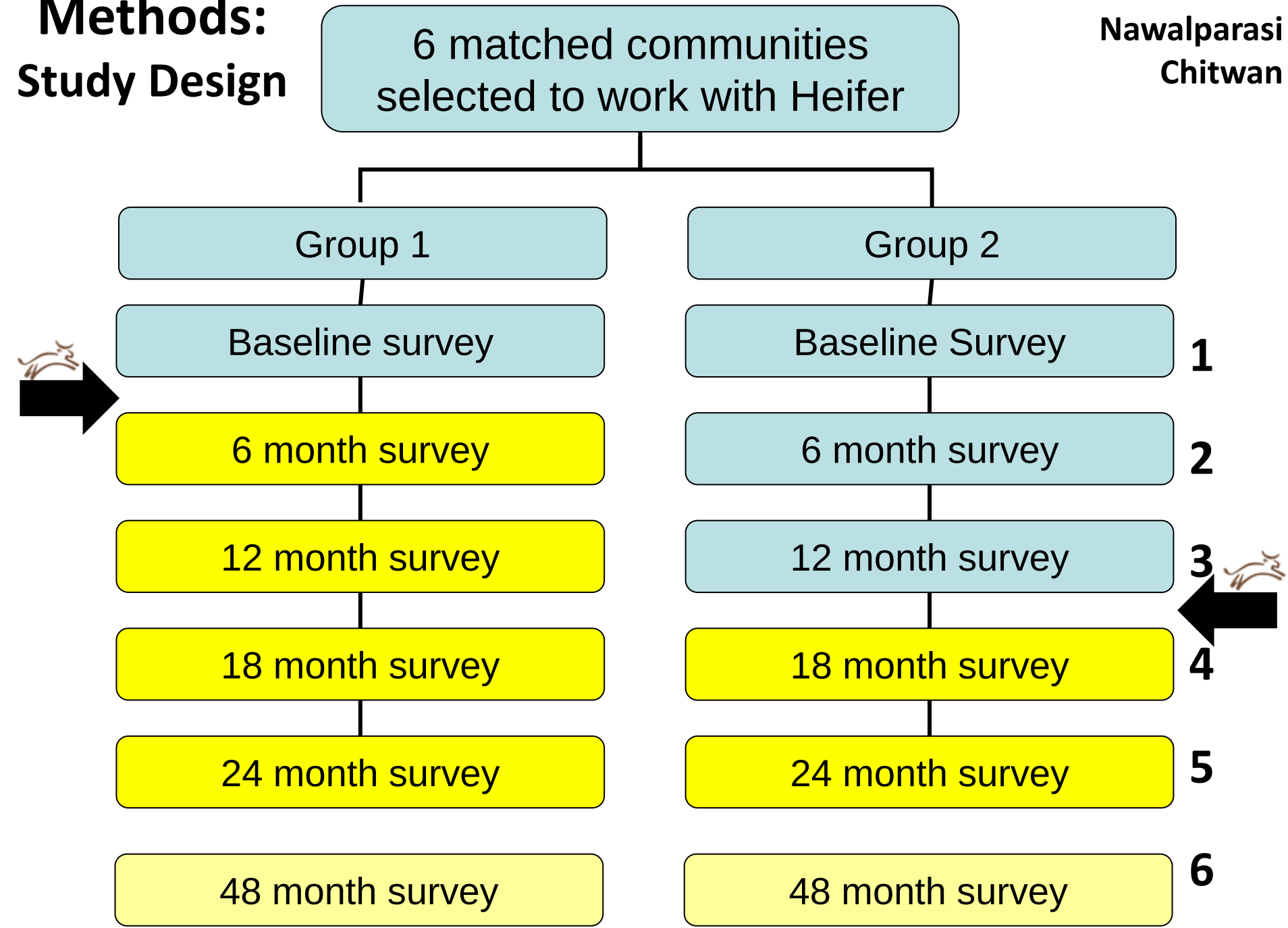
Diet of rural children in Nepal

Specific research questions

- What is the diet quality?
- Are there seasonal patterns or other influences?
- What – if any – are the effects of livestock-based community development activities on child diet?

Methods:
Study Design

Nuwakot
Nawalparasi
Chitwan



Information Collected

- Land
- Animals (FAO)
- SES (DHS)
- Income
- Food variety (WHO)

- **Child Growth**
- **Child Health**
- **CHILD DIET**

Methods: diet content

Dietary information (reported by mother)

- 24-hour recall of 17 food groups consumed by child
  - No information about amounts or preparation

- Compiled into 8 food groups (WHO +1):
  - starchy staples (grains & white potatoes)
  - vitamin-A rich fruits & vegetables
  - other fruits & vegetables
  - organ meat, meat, & fish
  - eggs
  - legumes, nuts, & seeds
  - milk & dairy products
  - oils

Methods: diet quality

- Dietary diversity scores (DDS): # of 8 food groups consumed
- Minimum dietary diversity (MDD): 4 or more food groups (WHO) (most children consumed rice, dal, oil)
- Animal source food consumption (ASF): meat, fish, eggs, or dairy

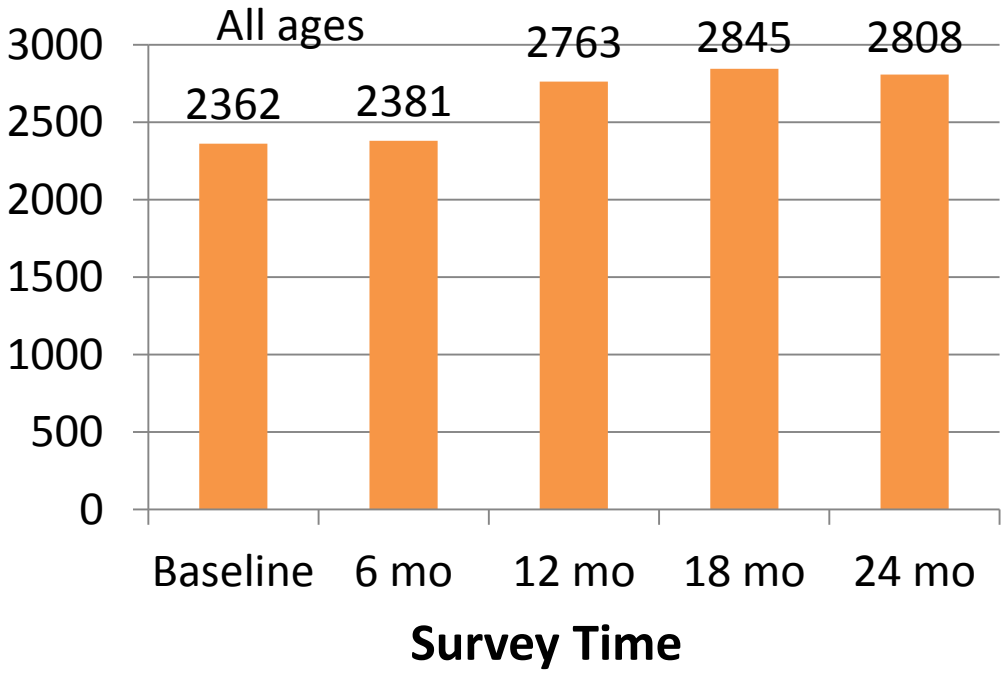
Analysis

- Exploratory regression
- HH level fixed-effects *(control for unobservable heterogeneity)*
- "Difference-in-differences" *(village, not HH randomization)*
- Surveys divided into "before" and "after"
- Season & region incorporated

→ Only expected variation remaining in model is *duration of program participation*

→ *Average treatment effect* (ATE) of Heifer's activities on child diet quality

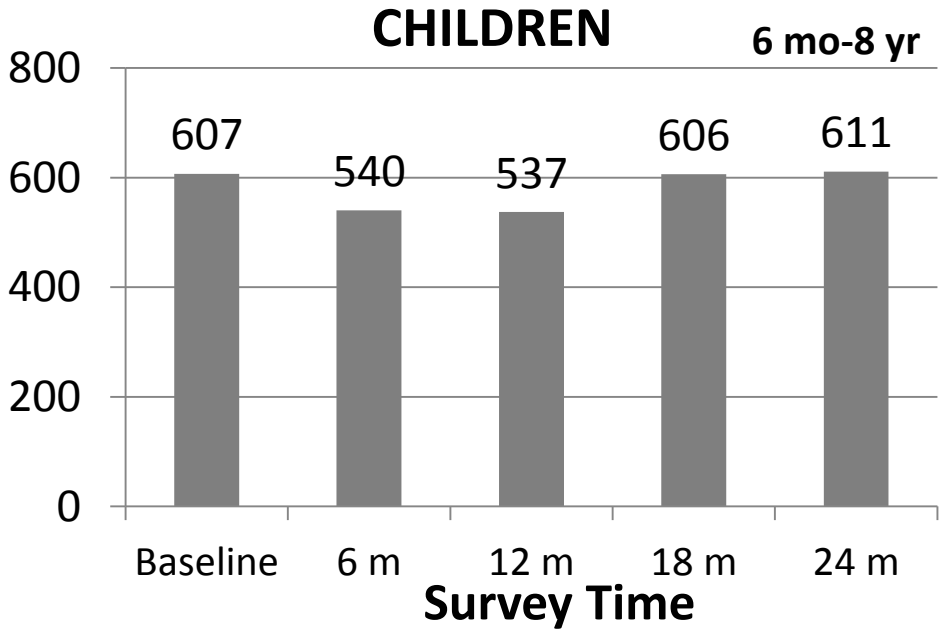
Results: Enrollment



2,994 individuals

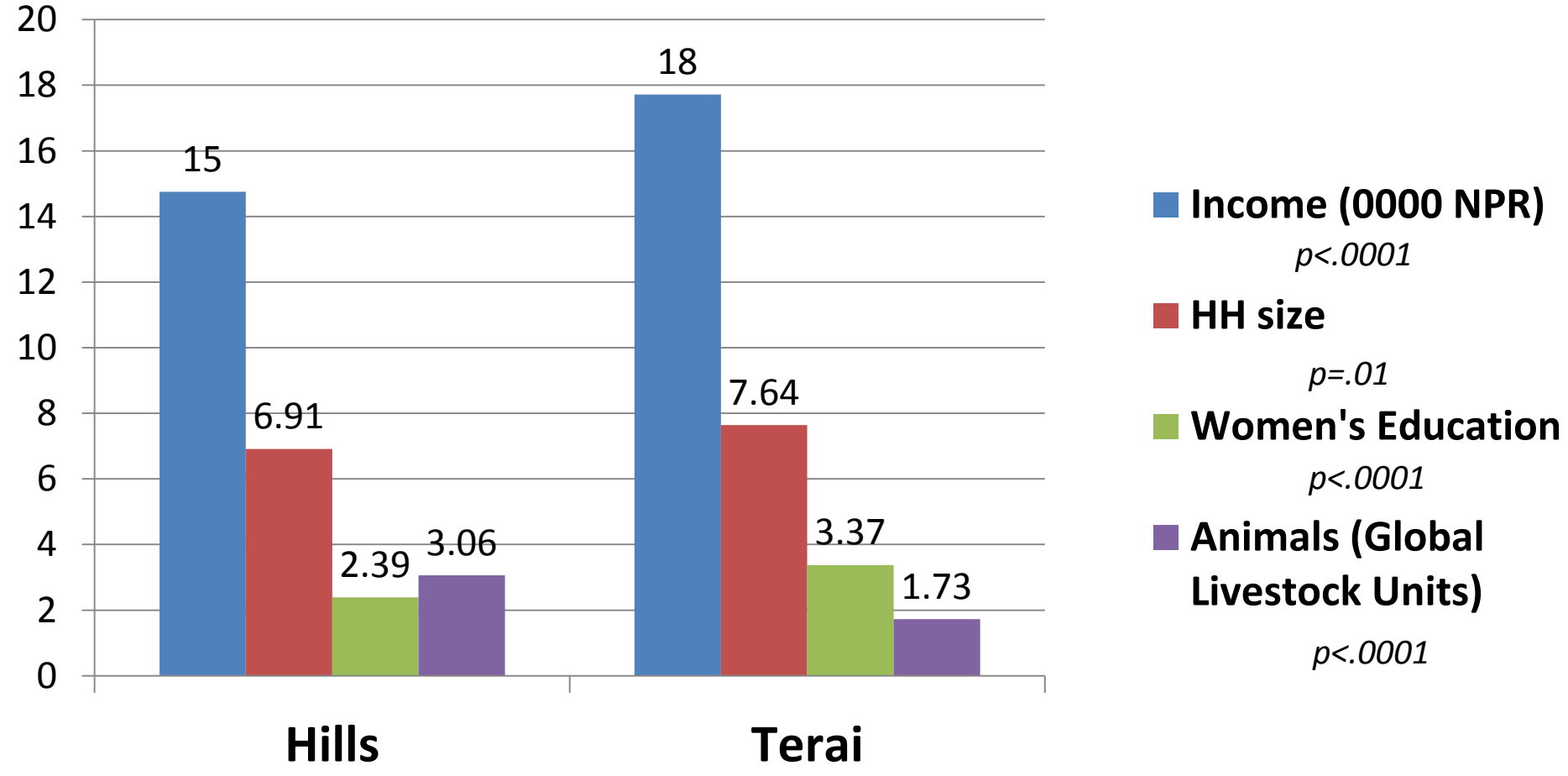
M=F 415 households

Av HH # members: 6.7

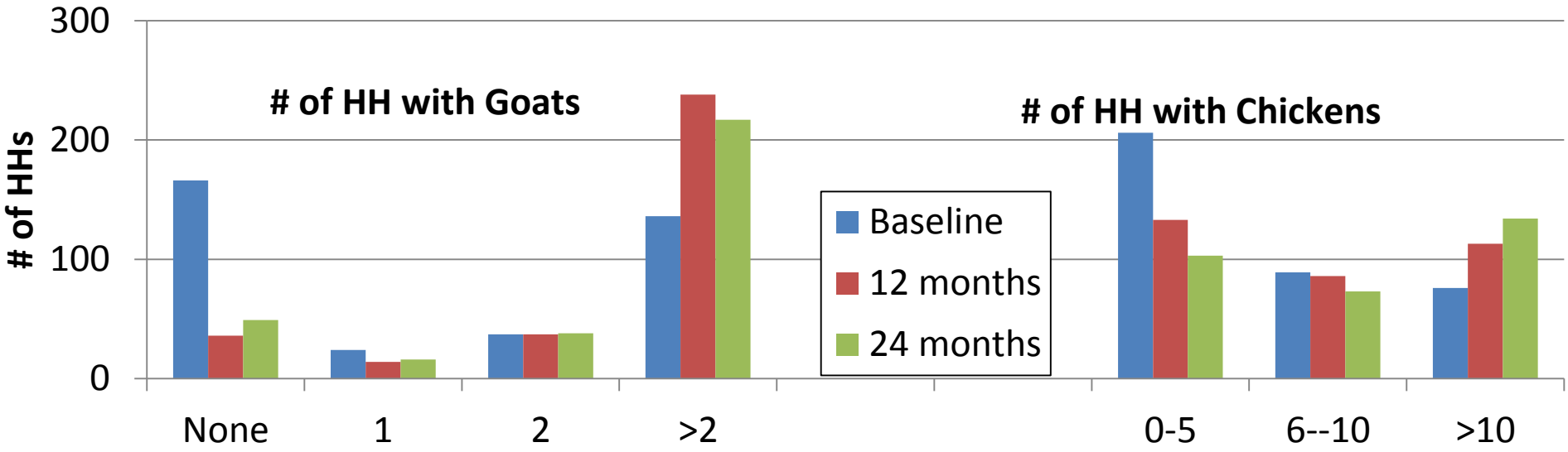


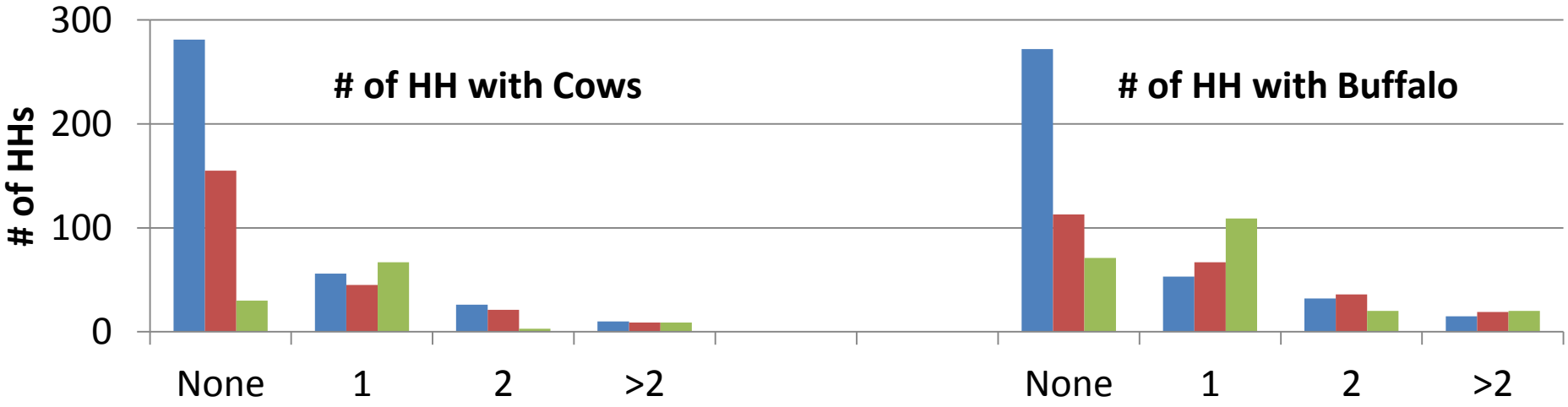
Regional Differences

Hills & Terai

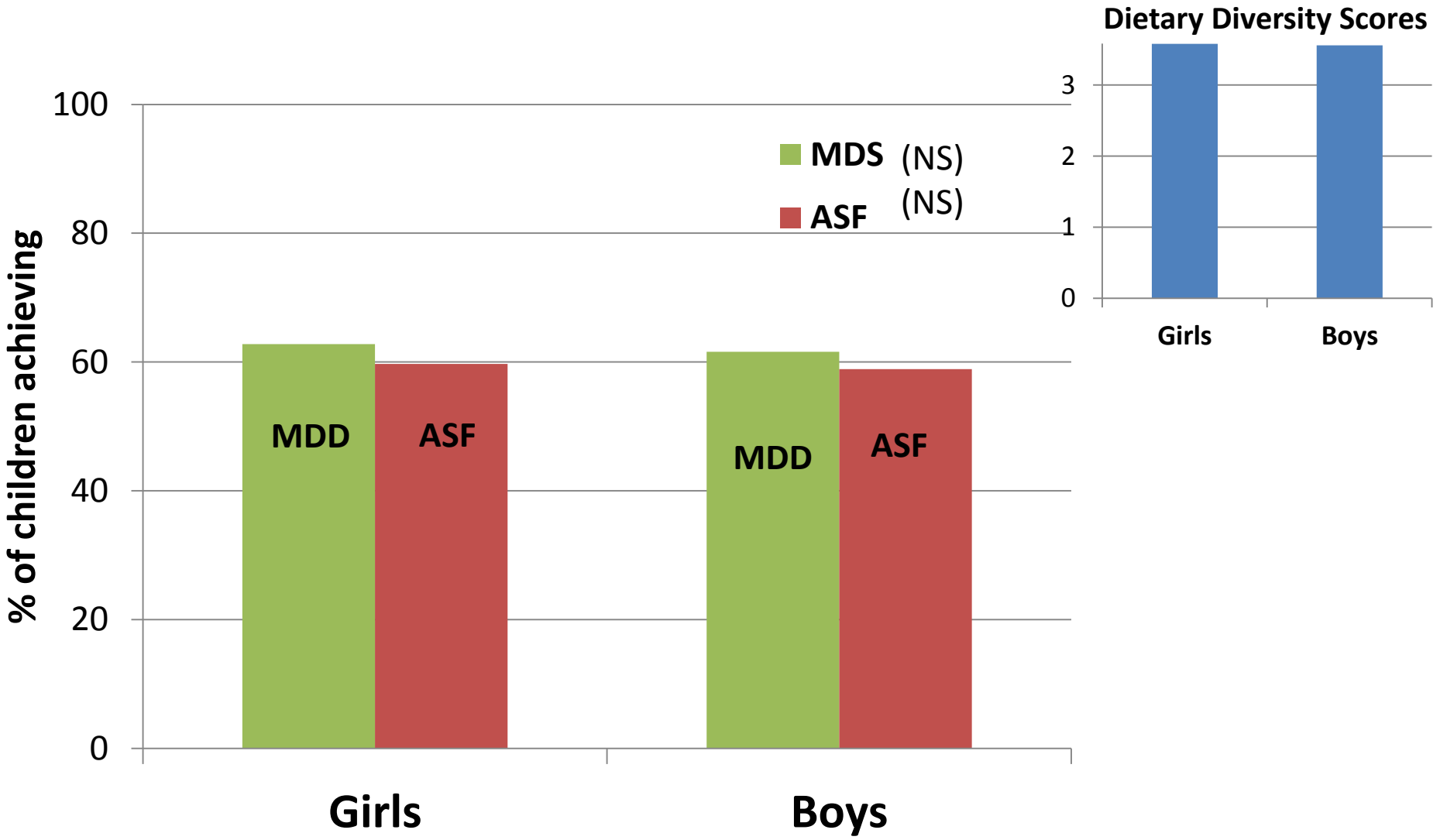


Household Livestock Holdings

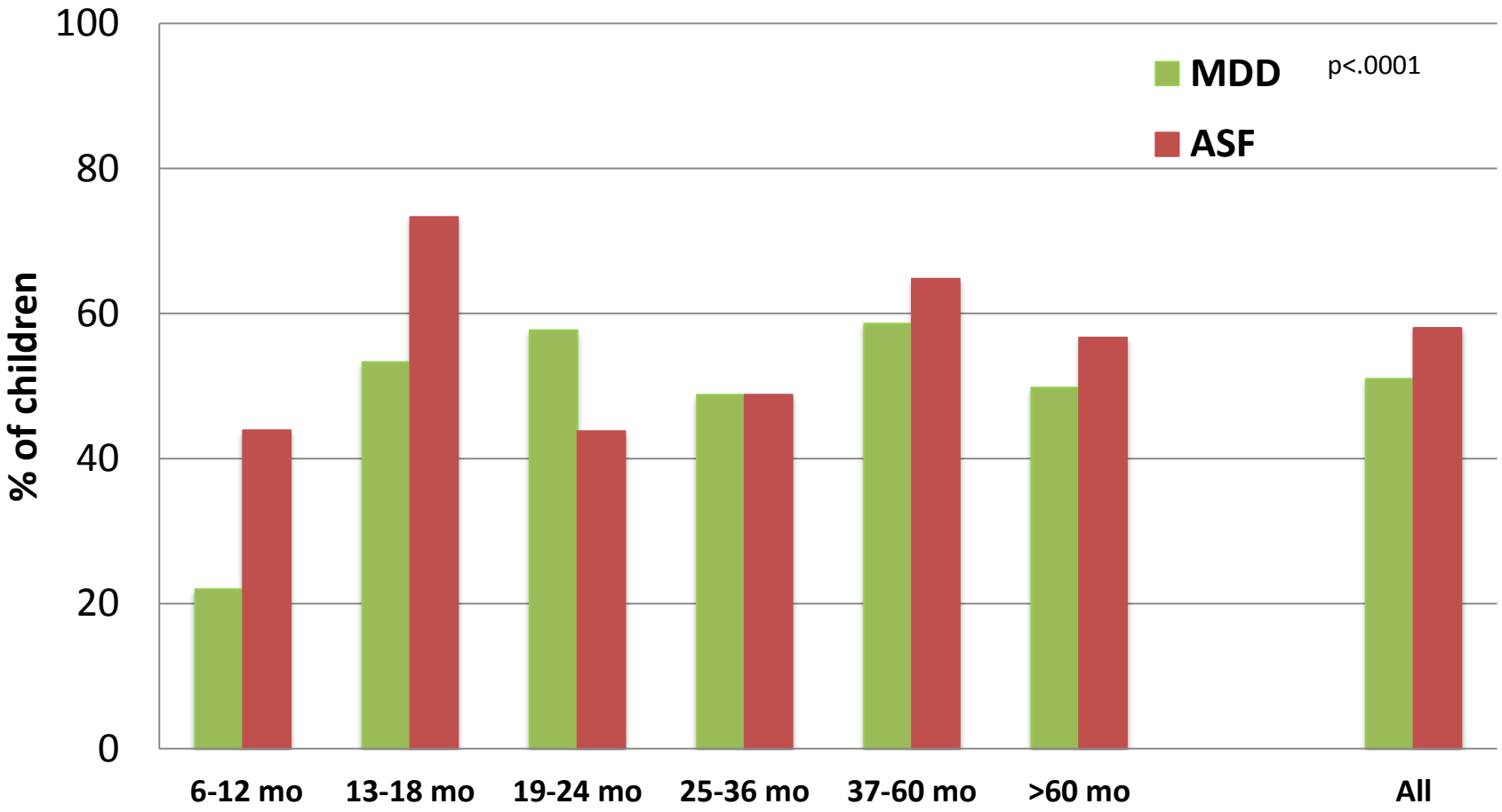


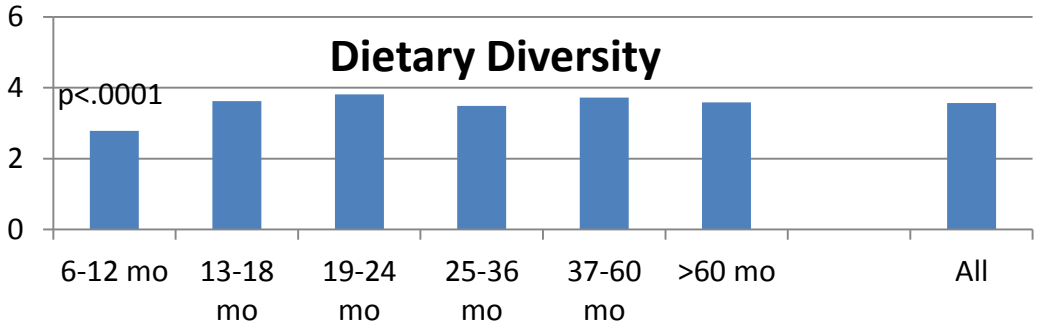


No Gender Differences

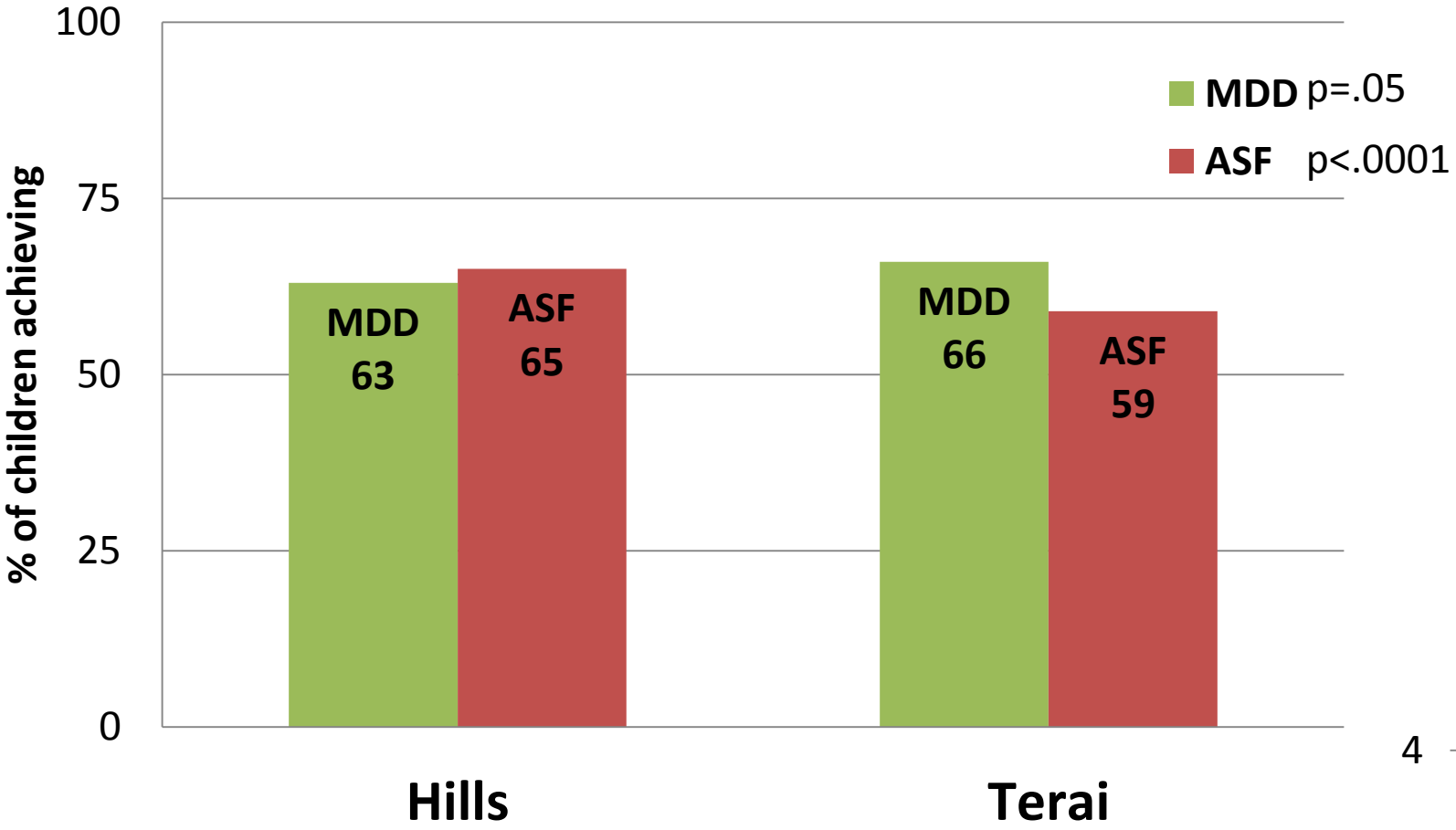


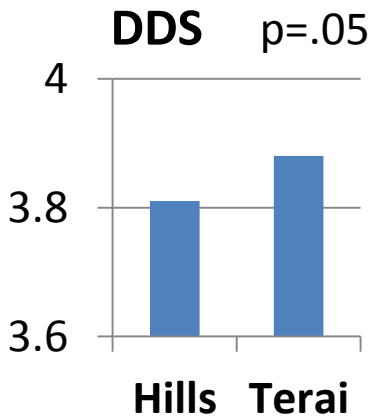
Dietary Quality by Age Group





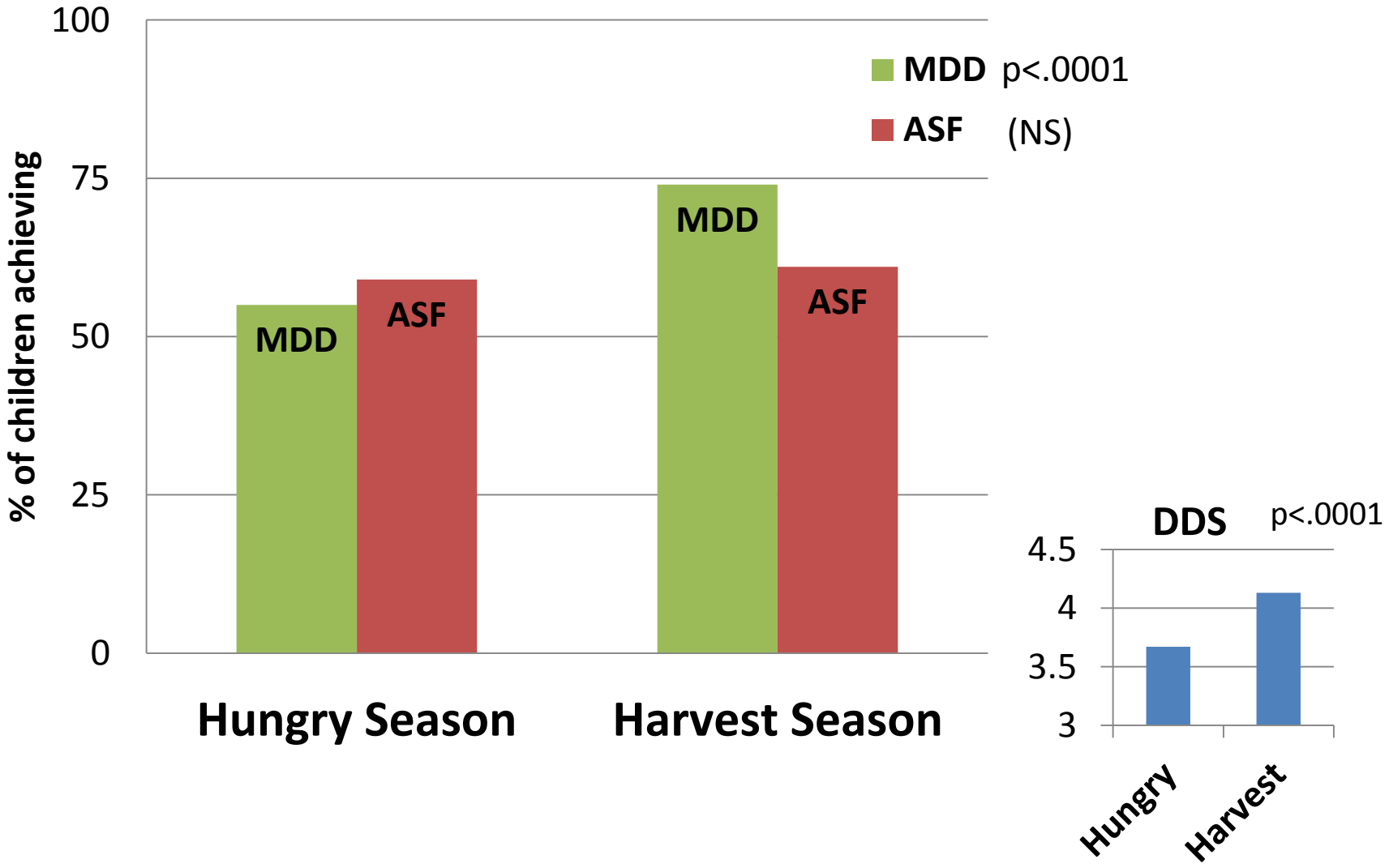
Regional differences in diet quality



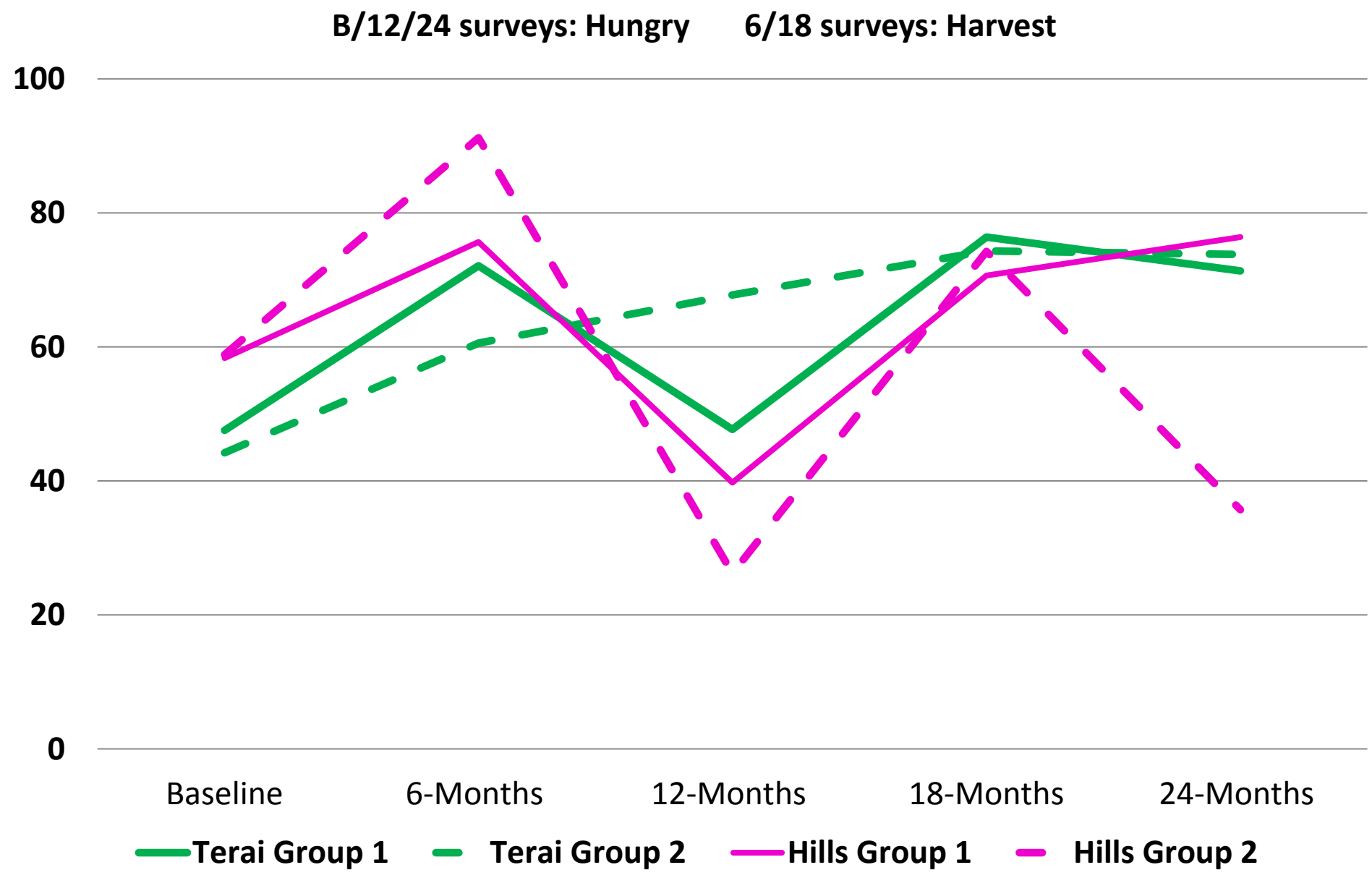


*

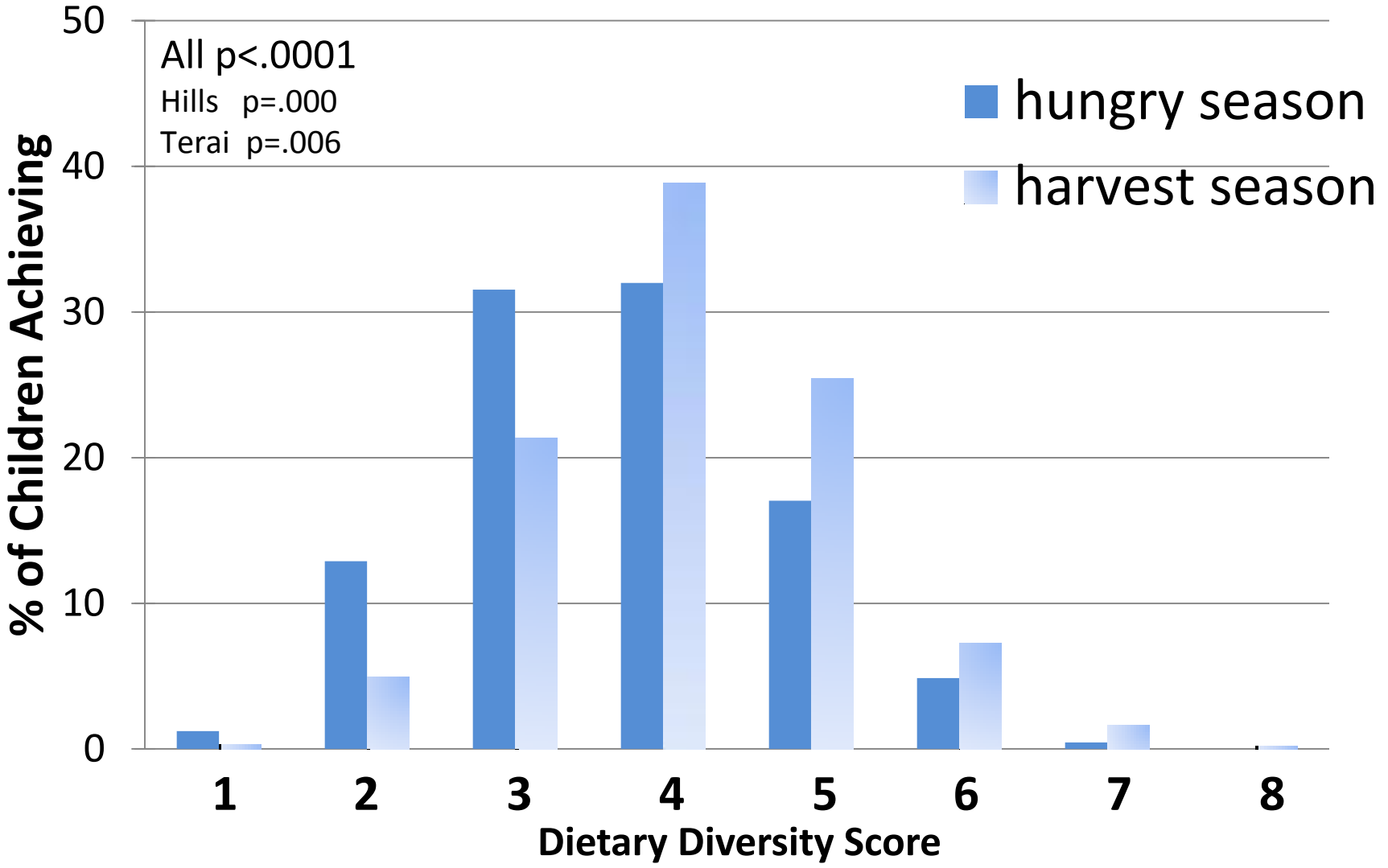
Seasonal differences in diet quality



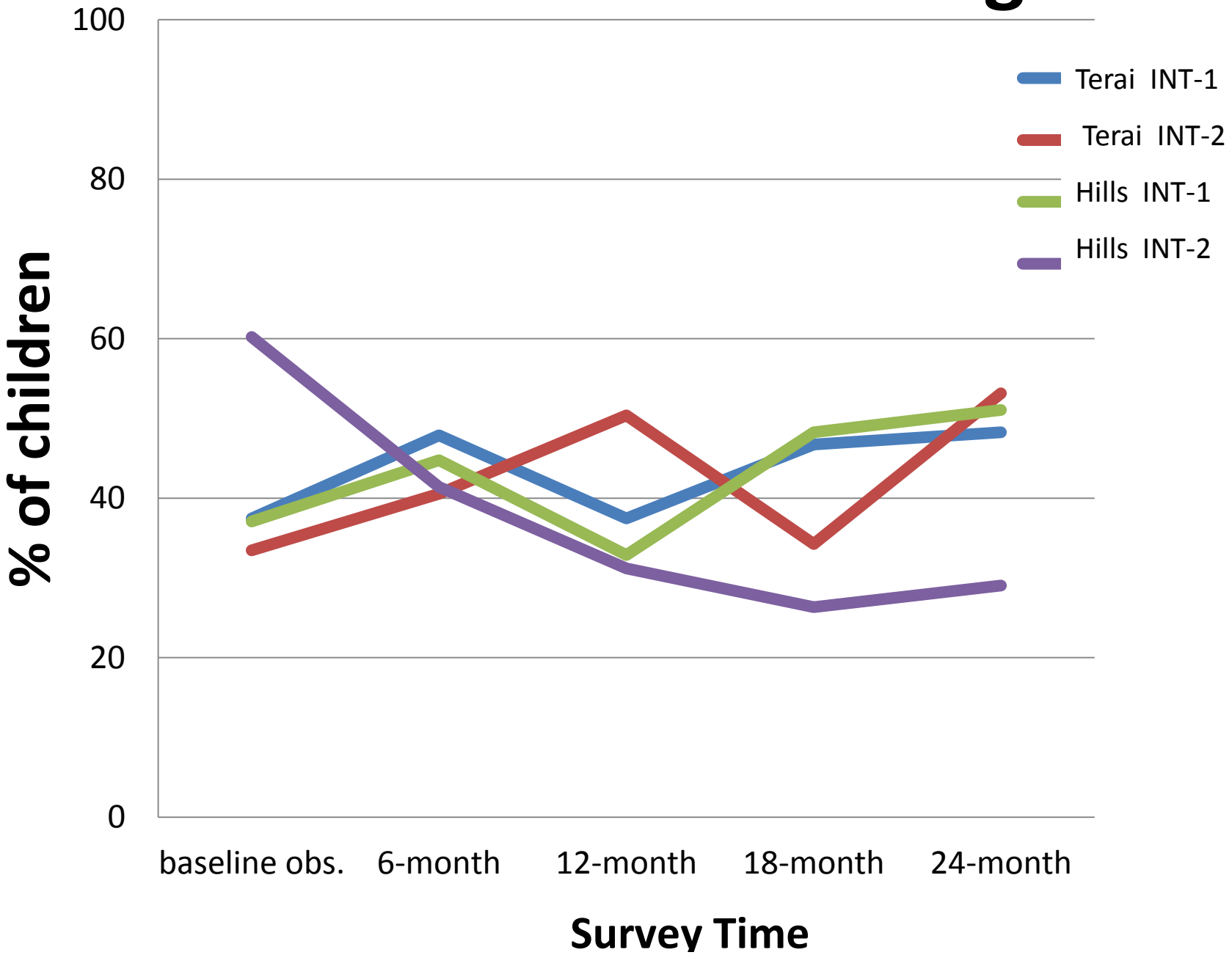
% of children achieving MDD by season



Seasonal patterns: Improved DDS more likely during the Harvest Season

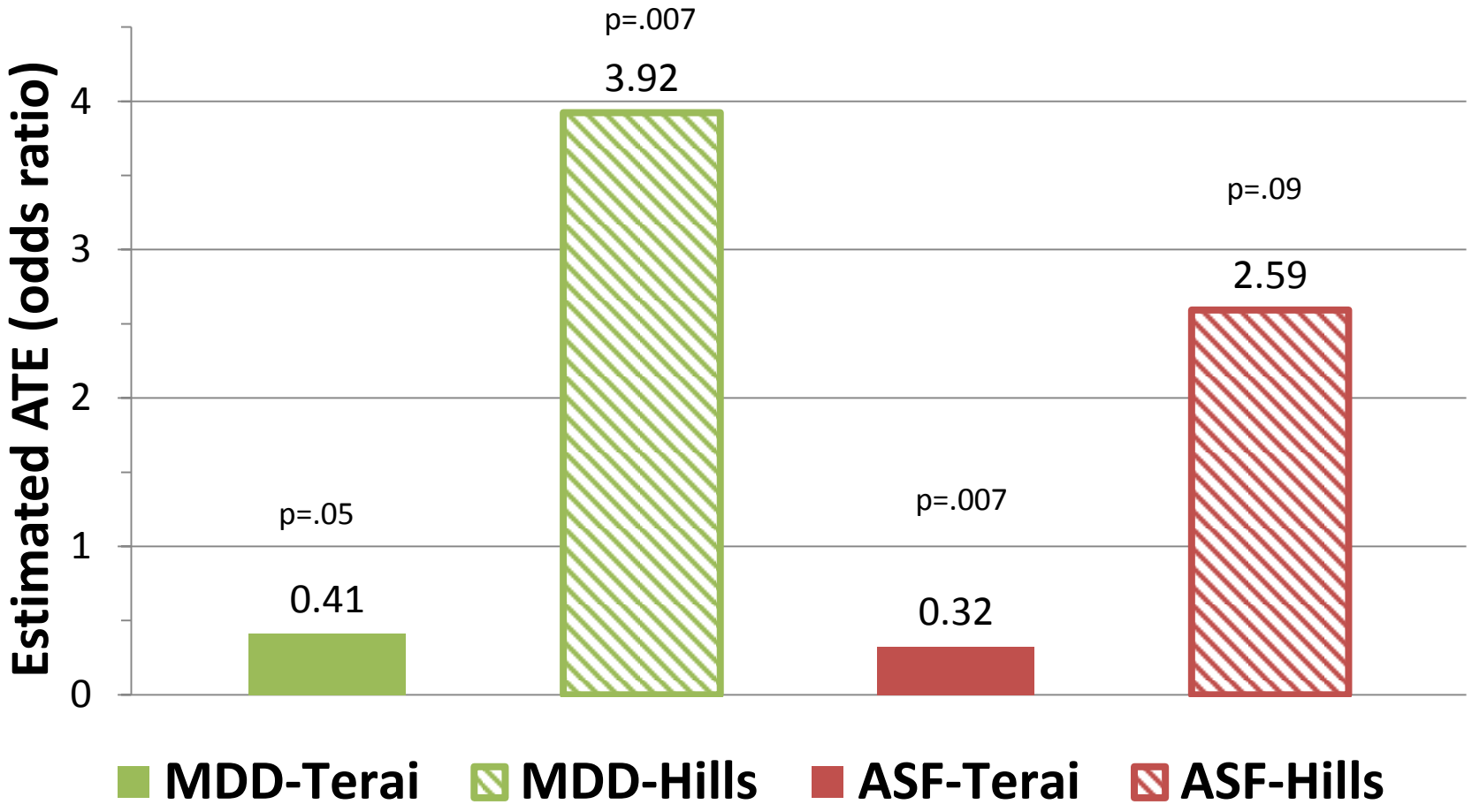


% of children consuming ASF



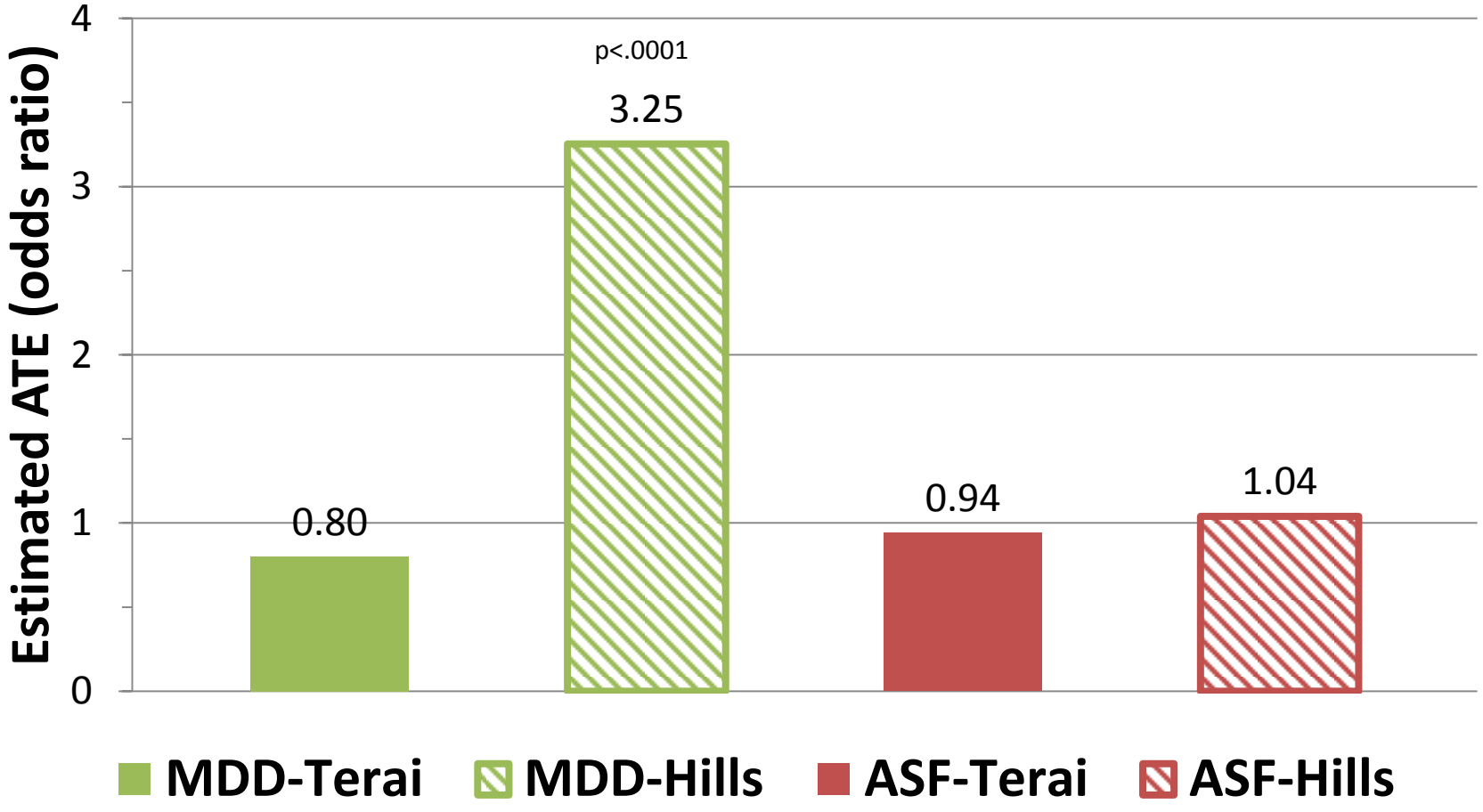
Do the activities of Heifer influence the diet of children?

Diets improved in the Hills **and *more* in the group that received Heifer inputs *earlier*…**



ATE=average treatment effect, Group 1 vs Group 2
Treatment*Phase (=time of initiation of Heifer)
(ATE (OR)=1, no effect)

Diet improved most in the Hills during the hungry season **and *more* in the group that received Heifer inputs *earlier* …**



ATE=average treatment effect, Group 1 vs. Group 2
Treatment*Season
(ATE (OR)=1, no effect)

Conclusions (1)

- **Livestock-based community development activities can affect nutrition outcomes... even without a specific nutrition focus**
  - Children in the Hills region had improved odds of consuming ASF and achieving MDD with earlier program implementation
  - Amelioration of some impacts of seasonal fluctuations in food availability

Conclusions (2)

- **Child age, season, & region contribute to child diet quality**
- **Other mechanisms are not completely understood**
  - Household factors?
    - Livestock? Kitchen gardens? Education? Cultural practices?
    - ?Initial dietary quality? Allocation?
  - Community strengthening/social capital development?
    - ?More responsive to Heifer inputs?
- **48-month data now available**
- **New study to disentangle some of these variables**

Acknowledgments

- Community participants
- Heifer International
- Heifer Nepal
- NTAG
- Nutrition Innovation Lab
- Tufts Friedman School