

Inequalities in dietary adequacy in the remote mountains of Nepal

Adolescent girls fare worst

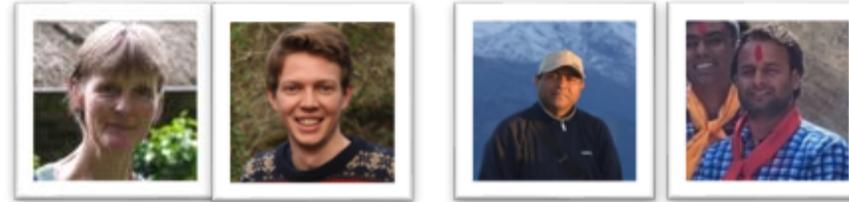
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Institute for Global Health
University College London

Coauthors: Tom Timberlake, Sujan Sapkota,
Helen Harris-Fry, Sushil Baral and Jane Memmott

Micro-Poll Project

3-year interdisciplinary project studying the links between pollinators, human nutrition and climate change in rural Nepal

Ecology Team



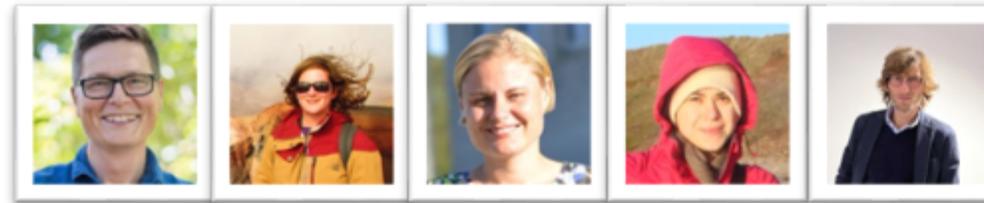
Jane Memmott & Tom Timberlake
University of Bristol

Daya Bhusal & Kedar Devkota
Tribhuvan University & AFU

Nutrition Team



Sushil Baral, Deepak Joshi, Shraddha Manandhar, Sujan Sapkota
HERD International, Kathmandu

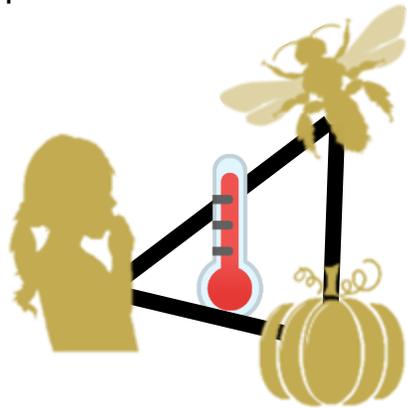


Tomas Roslin, Alyssa Cirtwill, Susanne Kortsch, Edith Villa Galaviz, Giovanni Strona
University of Helsinki



Sam Myers & Matt Smith
Harvard University

Naomi Saville & Helen Harris-Fry
UCL & LSHTM



Ecological data collectors



Nutritional data collectors



Rationale / objective

Little is known about the dietary adequacy of households in remote mountain areas of Nepal and the extent to which different household members get a fair share of the nutrients available in the diet.

Amongst adult men, adult women, adolescent girls (10-19) and children under 5 years in a remote mountain district of Nepal we aimed to:

- i) quantify year-round macro- and micro-nutrient intakes,
- ii) estimate probability of adequacy for 12 micronutrients by category of respondent and
- iii) quantify adequacy inequalities between household members.



Methods / analysis

Study design: longitudinal cohort of tracking nutritional status and dietary intake year-round in 10 remote mountain villages in Jumla district, Nepal



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Jumla district, Karnali Province, Nepal

Patmara

Rini

Lorpa

Luma

Chauraa

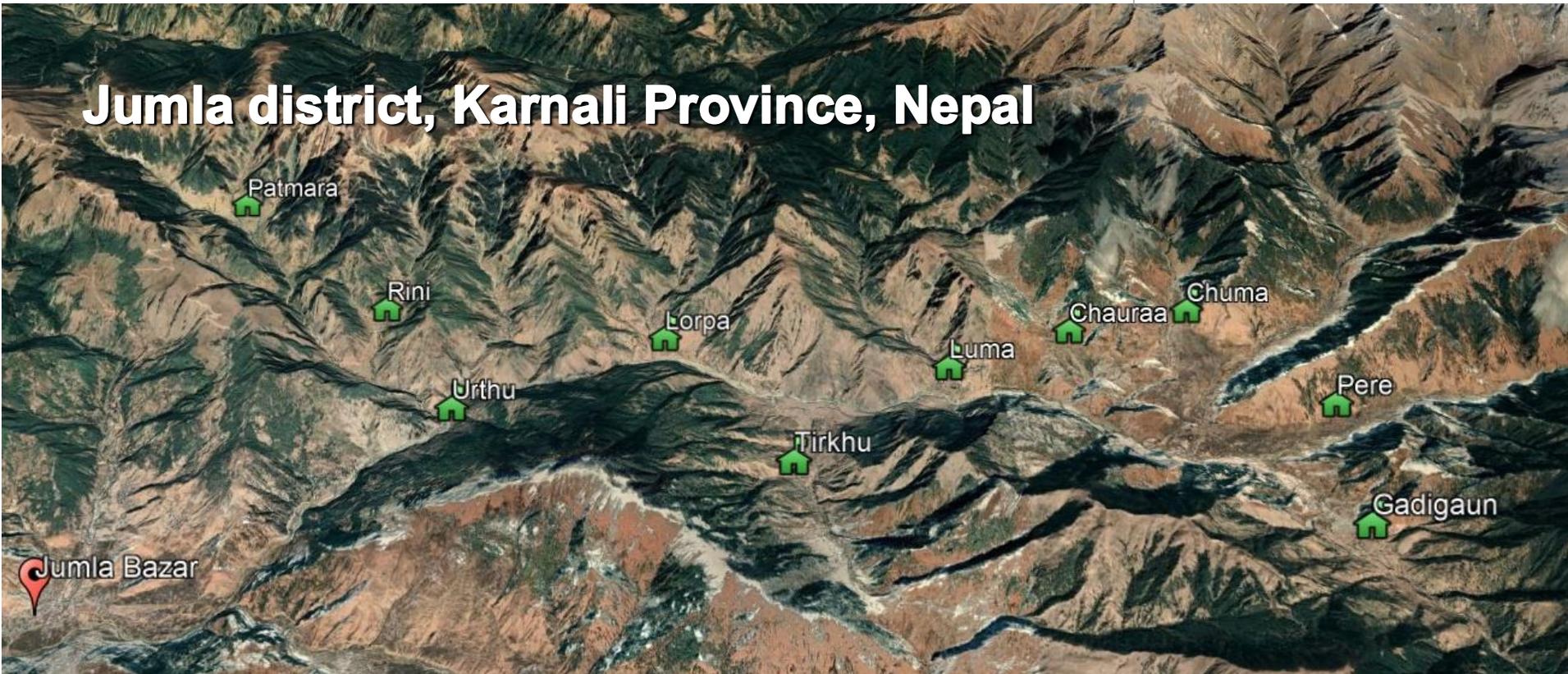
Chuma

Pere

Tirkhu

Gadigaun

Jumla Bazar



Participants: surveyed fortnightly for 12 months from November 2021 to November 2022



10 study villages



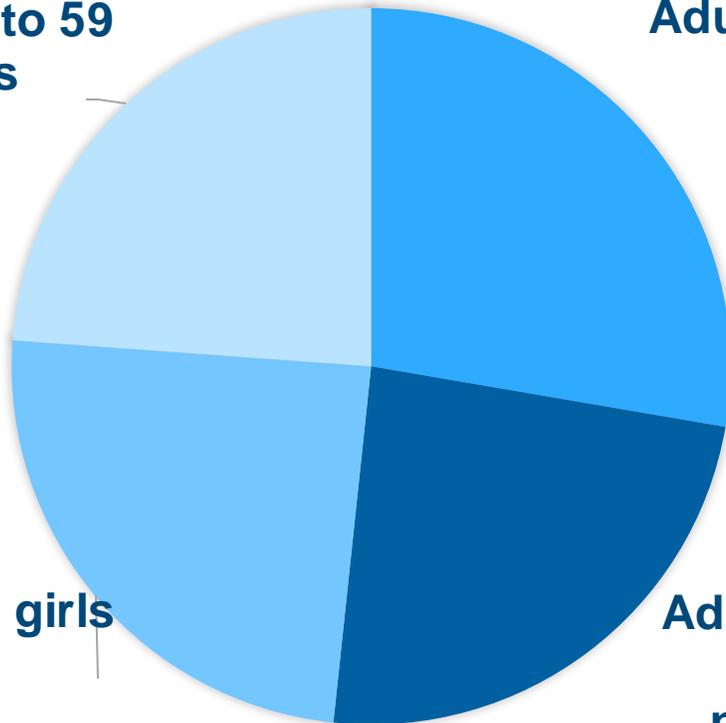
200 households (20/village)



776 participants (~4/household)

Children 6 to 59 months
24%
n=185

Adult women
28%
n=215



Adolescent girls
24%
n=190

Adult men
24%
n=186



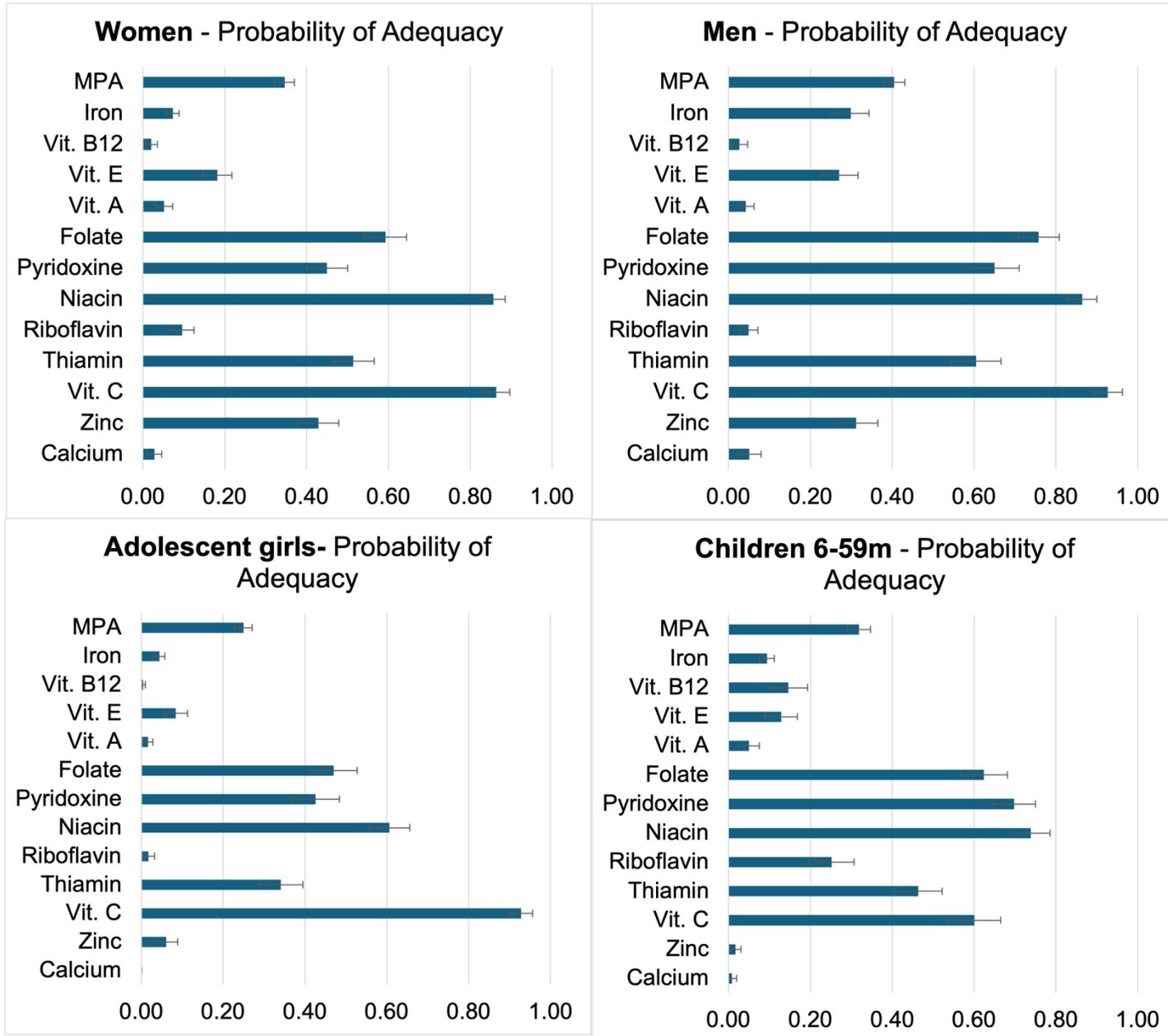
15,687 dietary recall surveys in total

Methods (3):

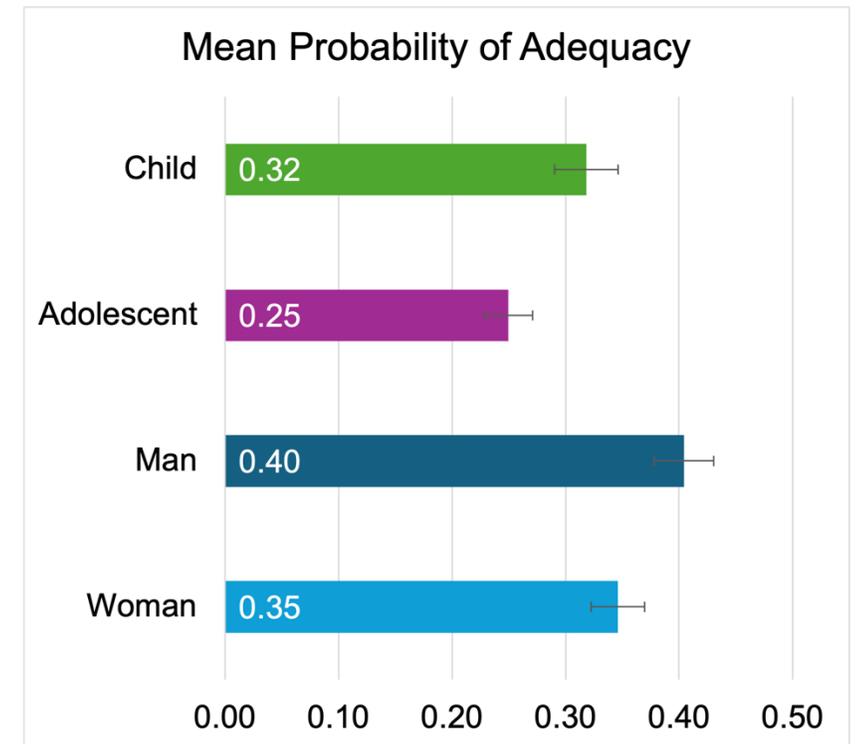
- Estimated **food intake** by weighing food models in multi-pass 24-hour recalls.
- Calculated annual **probability of adequacy** across ≤ 24 recalls per person using nutrient values from food composition tables (including local standard recipes) .
- Estimated intrahousehold equity of nutrient adequacy by **calculating adequacy shares** for each respondent category and micronutrient, adjusted for household size.



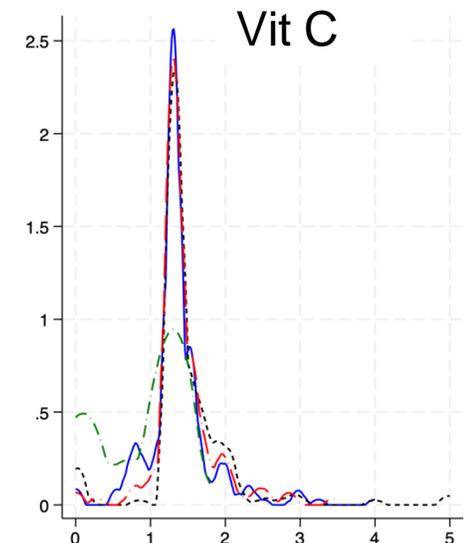
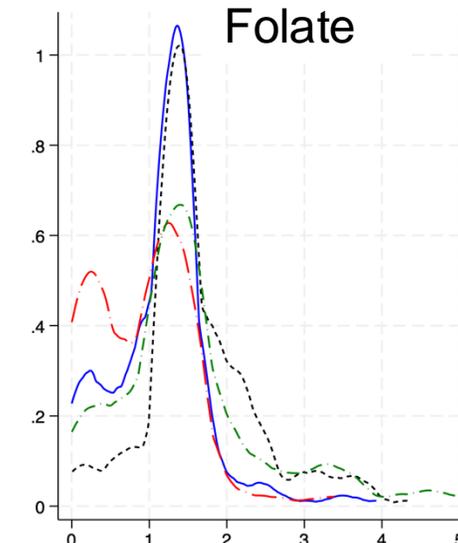
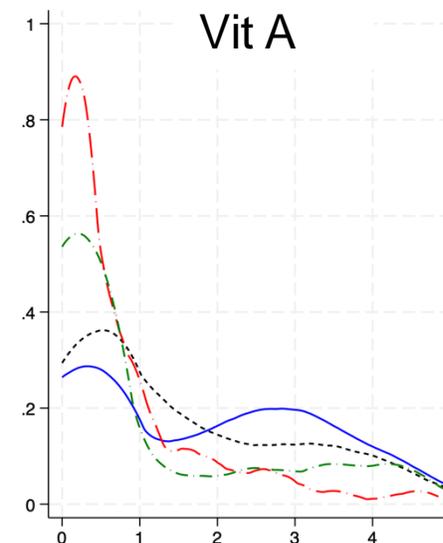
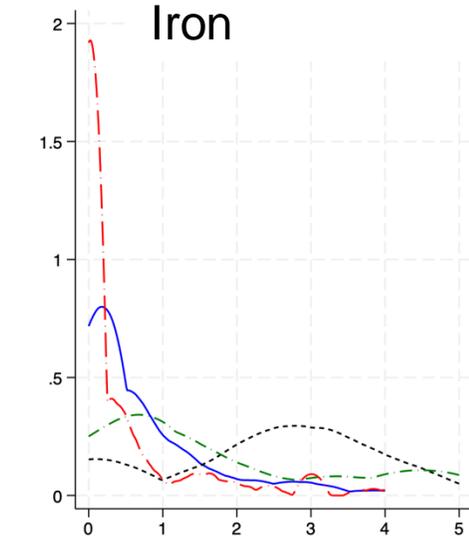
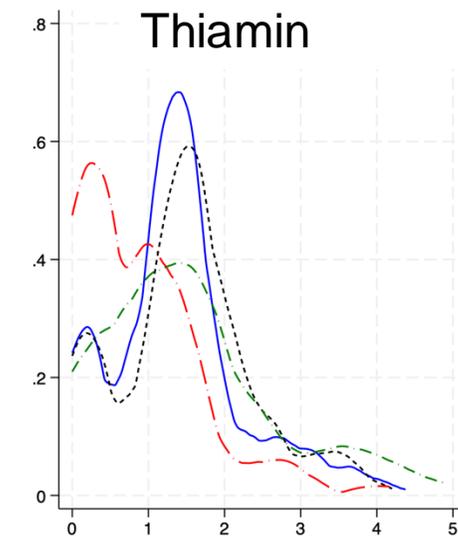
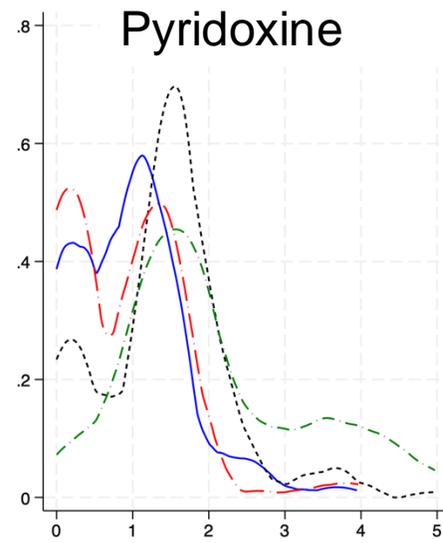
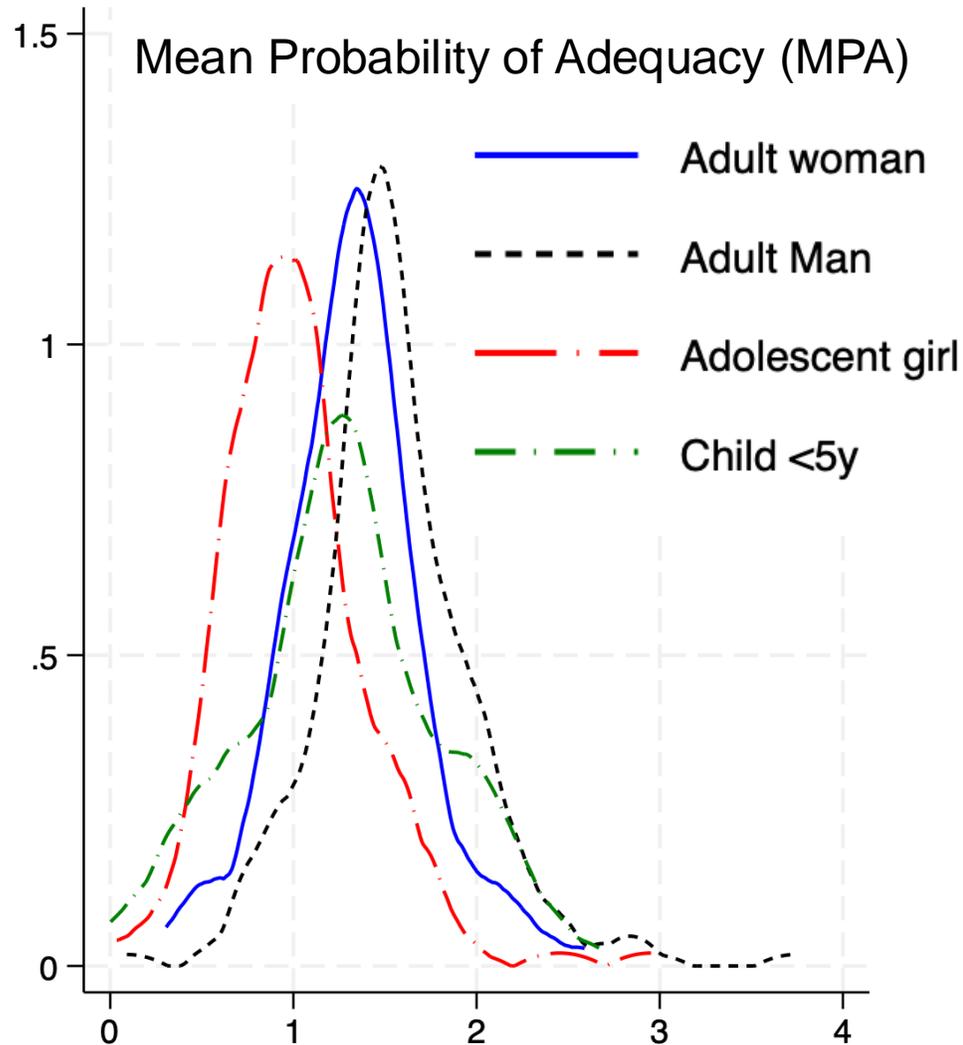
Results



- **Diets were extremely inadequate** in micronutrients especially calcium, vitamin A, B12, riboflavin and vitamin E
- Micronutrient shares within households were highly inequitable.

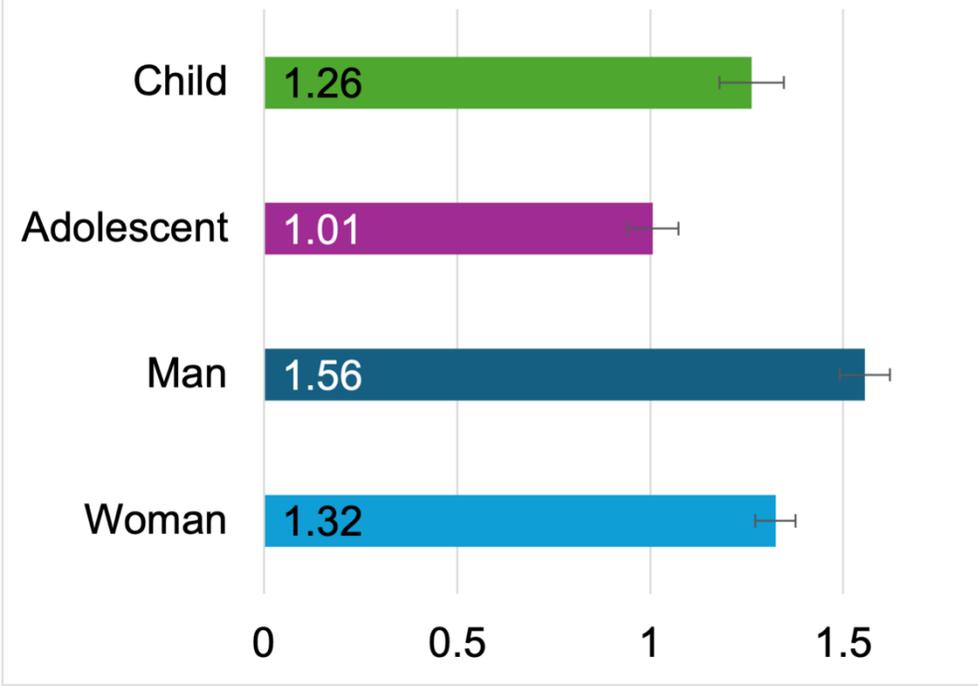


Kernel density plots show highly inequitable probability of adequacy (PA) shares between household members

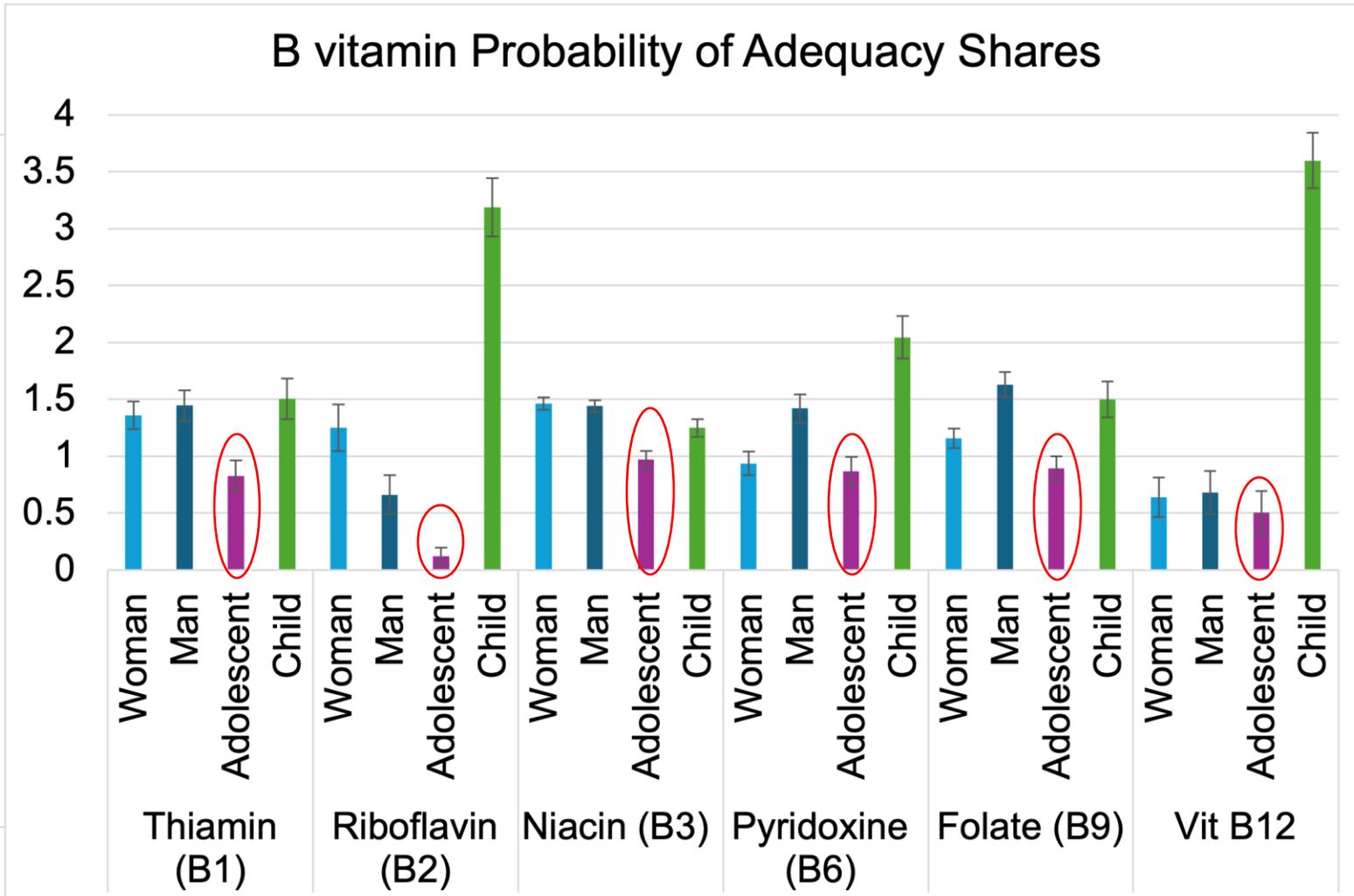


Overall shares are lowest for adolescent girls in terms of Mean Probability of Adequacy and for all the B vitamins. Children’s B Vitamin adequacy shares are relatively good.

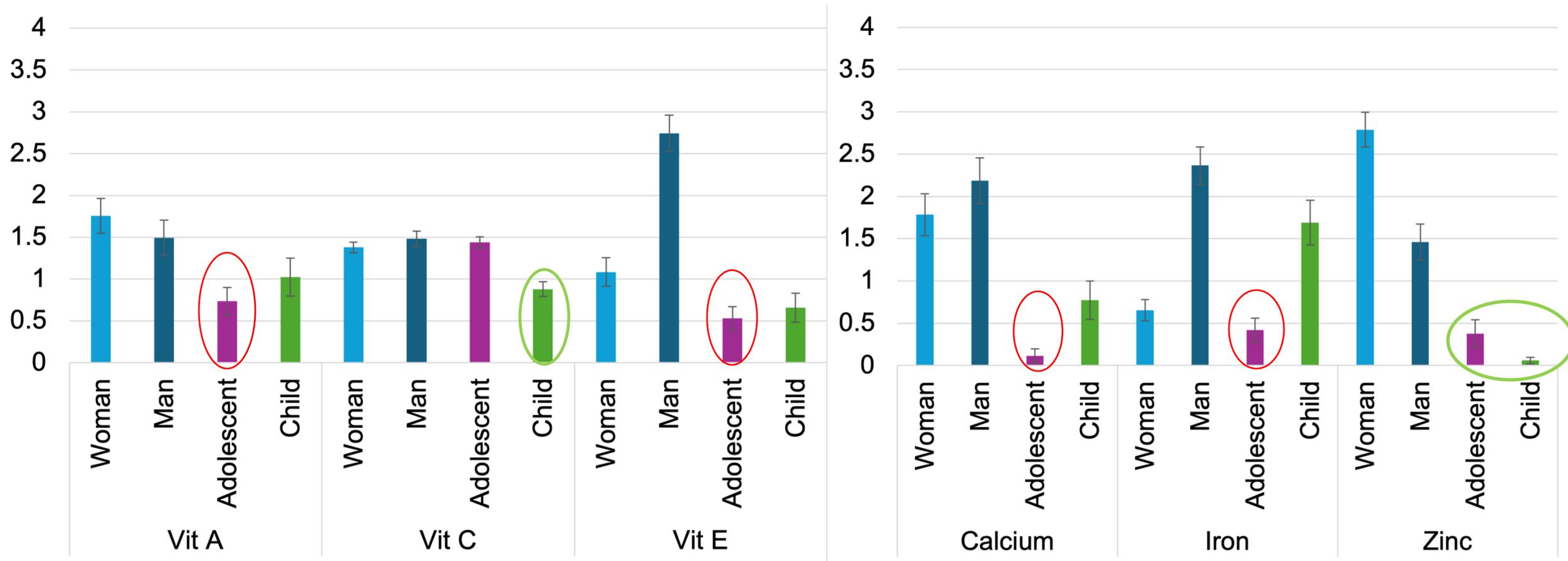
Mean Probability of Adequacy shares



B vitamin Probability of Adequacy Shares



- **Adolescent girls' shares are lowest** for calcium, riboflavin, iron, vitamins E, A, thiamine, pyridoxine, folate and niacin.
- Children's shares are lowest for Zinc and Vitamin C
- Women's shares are lower than men's for all nutrients except Vitamin A, Riboflavin, Niacin and Zinc.



Implications

- The extreme intrahousehold inequality in micronutrient intakes for adolescent girls and children relative to adults, especially men, calls for gender-transformative social and behaviour change and empowerment interventions in Nepal.
- To tackle extreme dietary inadequacy overall, social protection, food fortification and micronutrient supplementation are needed.
- Future studies should design and test these interventions.



Questions?

