

ENERGY EXPENDITURE, TIME USE, AND FOOD INTAKES IN AGRICULTURAL AND RURAL LIVELIHOODS

Descriptive findings from rural Nepal

Giacomo Zanello¹, Fiorella Picchioni¹,
C. S. Srinivasan¹, Patrick Webb²

¹ University of Reading (UK)

² Tufts University (USA)

Research funded by:



g.zanello@reading.ac.uk

Feed the Future – 6th Annual Scientific Symposium

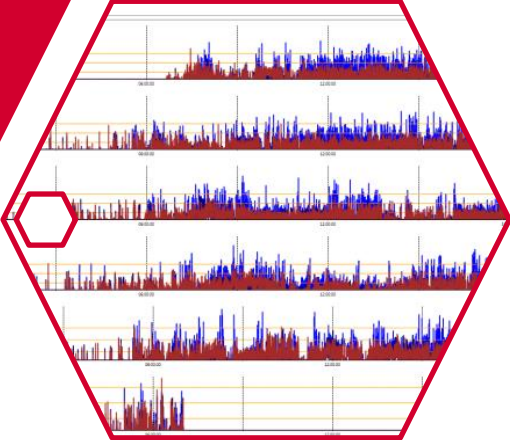


Food Intakes



Time use

Energy Expenditure



What could we learn about
energy expenditure, time use
and food intakes patterns

from tracking **40** Nepali
farmers

for a
total of **26,880** hrs?

STUDY DESIGN

- Fieldwork in Chitwan (June - October 2017) and Kavrepalanchowk (March - September 2018) districts in Nepal.
- Data collection:
 - Total sample of 40 individuals (20 males and 20 females) wearing accelerometry devices for 7 full consecutive days for 4 weeks across the agricultural season (land preparation, sowing/seeding, land maintenance, and harvesting).
 - Household questionnaire followed by daily individual questionnaires capturing 24h recall of time use and food intakes.
 - Full sample of 1,120 days and 26,880 hours.

STUDY DESIGN



ANTHROPOMETRIC AND ACTIVITY DATA OF PARTICIPANTS IN NEPAL, BY GENDER

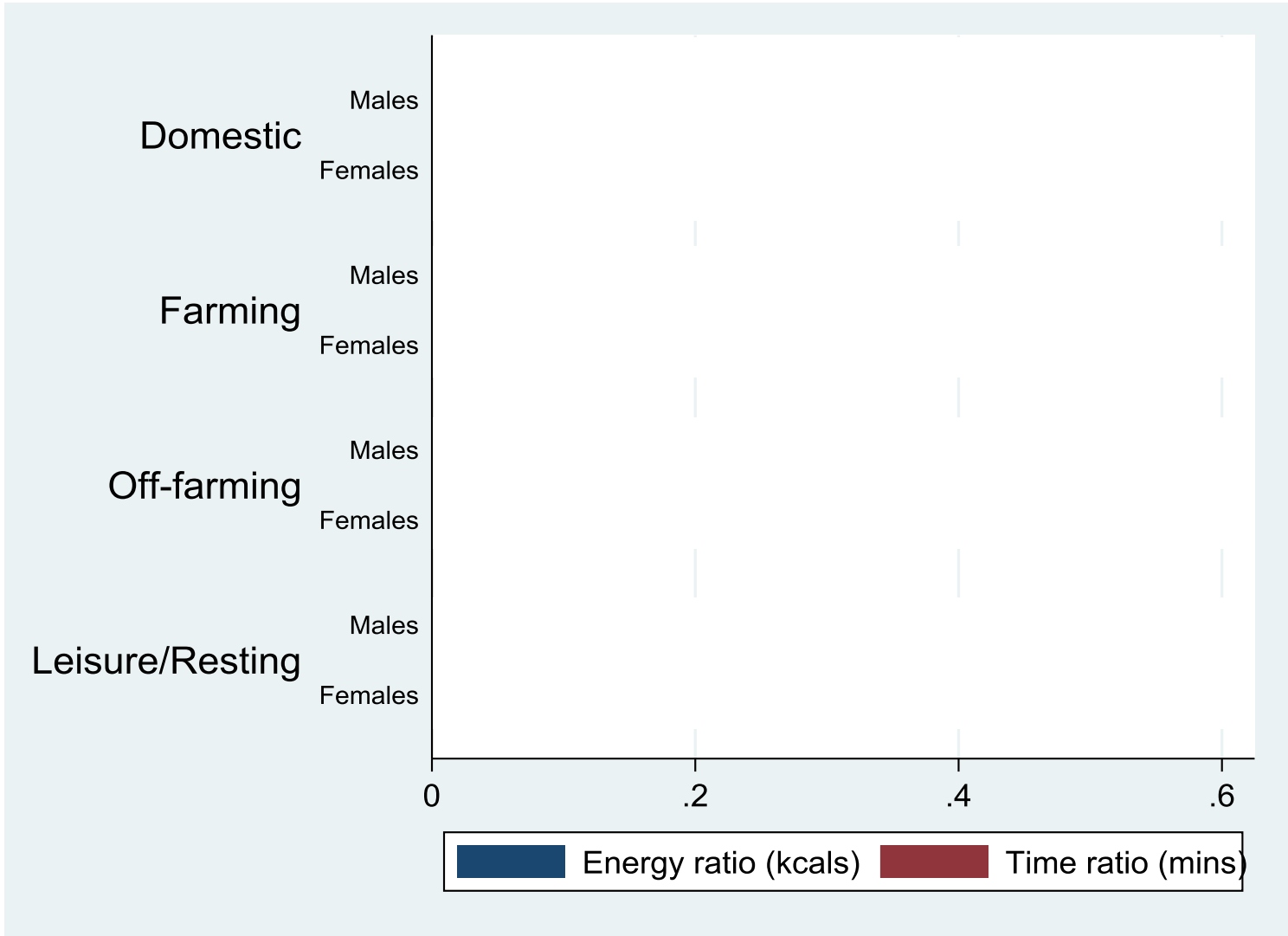
	Males (n = 20; days = 515)	Females (n = 20; days = 513)	Difference	Full sample (n = 40; days = 1,028)
Age (years)	25.3	25.0	0.3	25.2
Kcal intake (kcal/day)	2,100	2,100	0	2,100
BMI (kg/m ²)	21.5	21.5	0	21.5
AEE (kcal/d)	2,100	2,100	0	2,100
TEE (kcal/d)	2,100	2,100	0	2,100
PAL	1.2	1.2	0	1.2
Light activity (%)	25	25	0	25
Moderate activity (%)	25	25	0	25
Vigorous activity (%)	25	25	0	25
Number of days (over 28)	25.3	25.0	0.3	25.2

Notes: Stats based on days with less than 3 hours of non-wearing time. Activity Energy Expenditure (AEE), Total Energy Expenditure (TEE), Physical Activity Level (PAL) (Total Energy Expenditure/BMR).

TIME USE - ENERGY EXPENDITURE

- Most of the research on women's time burden and agricultural labour employs time-use data to explore how time is allocated and used among women.
- However, time spent on different activities does not fully explain the intensity that different types of work entail.
- Time intense vs Energy intense activities

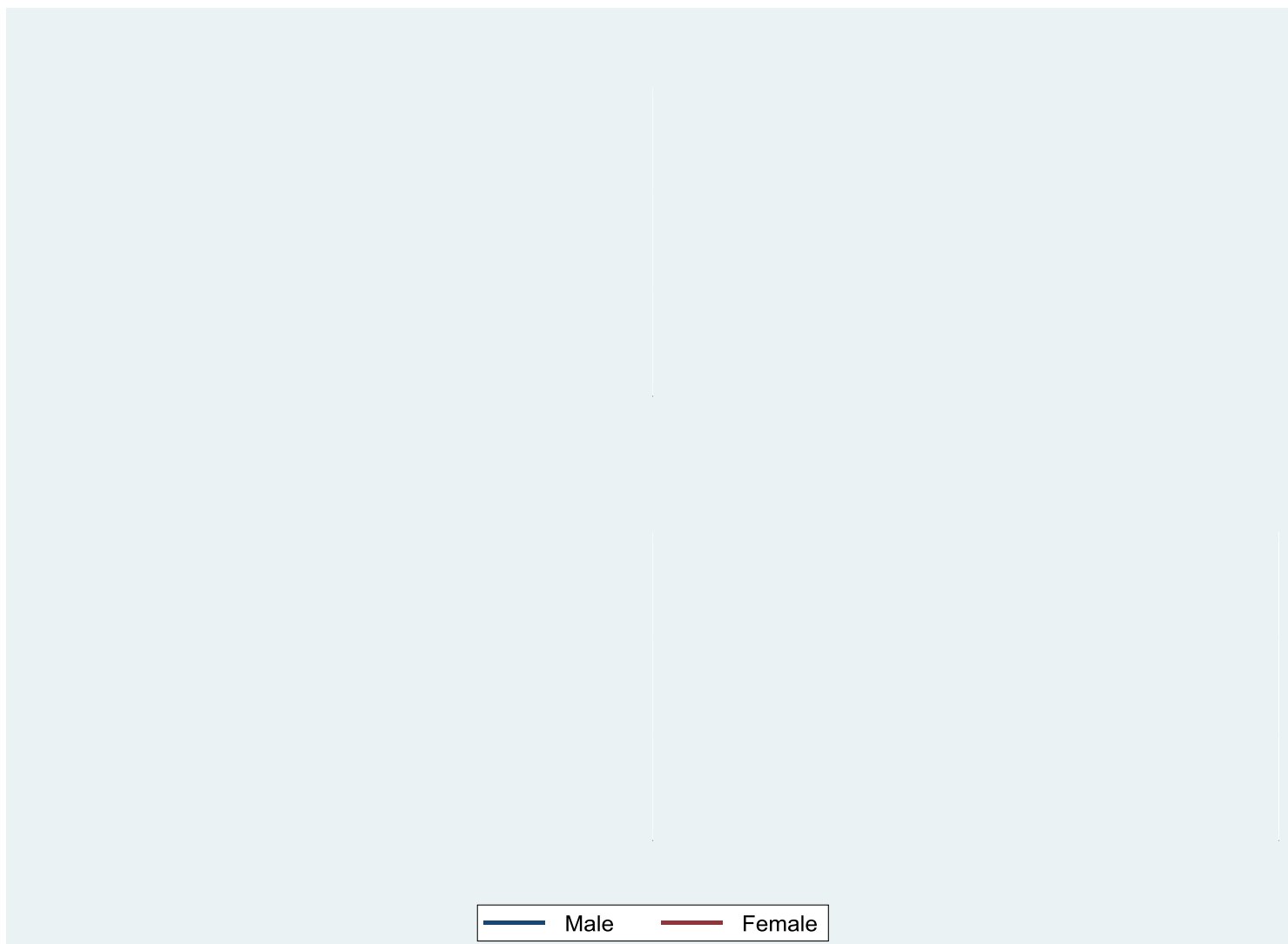
TIME USE - ENERGY EXPENDITURE



FOOD INTAKE - ENERGY EXPENDITURE (I)

- BMI (Body Mass Index) is one of the most common metrics to assess the long term nutritional status of people.
- How can we capture short-term (seasonal) changes in energy balance?
- We use Caloric Adequacy Ratio (CAR) (i.e. calories in over calories out) across the agricultural season and compare males and females. $CAR < 1$ captures energy inadequacies.

FOOD INTAKE - ENERGY EXPENDITURE (I)



FOOD INTAKE - ENERGY EXPENDITURE (II)

- There is a concern that rural and low income setting people are becoming more sedentary and at the same time diets are becoming more dominated by processed food.
- How the change of activity patters due to mechanization and improved infrastructure will have an impact on energy requirements of farm households?
- We use Compositional Data Analysis to compare changes in (predicted) calorie requirement on account of sedenterization for males and females in various households characteristics.

FOOD INTAKE - ENERGY EXPENDITURE (II)

- Change in calorie expenditure for 60 minutes increase in light activities (with a proportional reduction of moderate and vigorous activities)

	Males	Female	Differenc
Small households			
Large households			
Difference			
Non-irrigated households			
Irrigated households			
Difference			
Wealth (below median)			
Wealth (above median)			

FIELD MANUAL + WORKSHOP

Using Accelerometers in Low- and Middle-Income Countries

A Field Manual for Practitioners



Giacomo Zanello, C.S. Srinivasan, Fiorella Picchioni,
Patrick Webb, Paul Nkegbe, Radhika Cherukuri,
Shalles Neupane, Yazidu Ustarz, Nithya Gowdru,
Saurav Neupane, and Amanda J. Wyatt

ENERGY EXPENDITURE, TIME USE, AND FOOD INTAKES IN AGRICULTURAL AND RURAL LIVELIHOODS

Descriptive findings from rural Nepal

Giacomo Zanello¹, Fiorella Picchioni¹,
C. S. Srinivasan¹, Patrick Webb²

¹ University of Reading (UK)

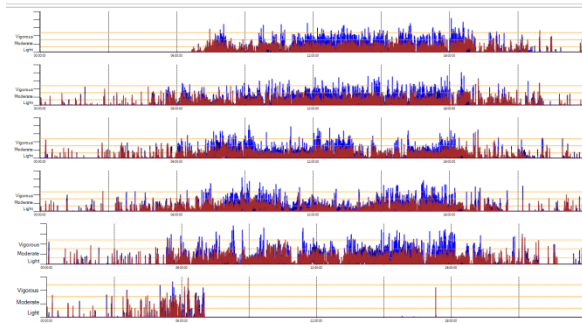
² Tufts University (USA)

Research funded by:



g.zanello@reading.ac.uk

Feed the Future – 6th Annual Scientific Symposium



Energy expenditure



Food intakes



Time-use / activity



