

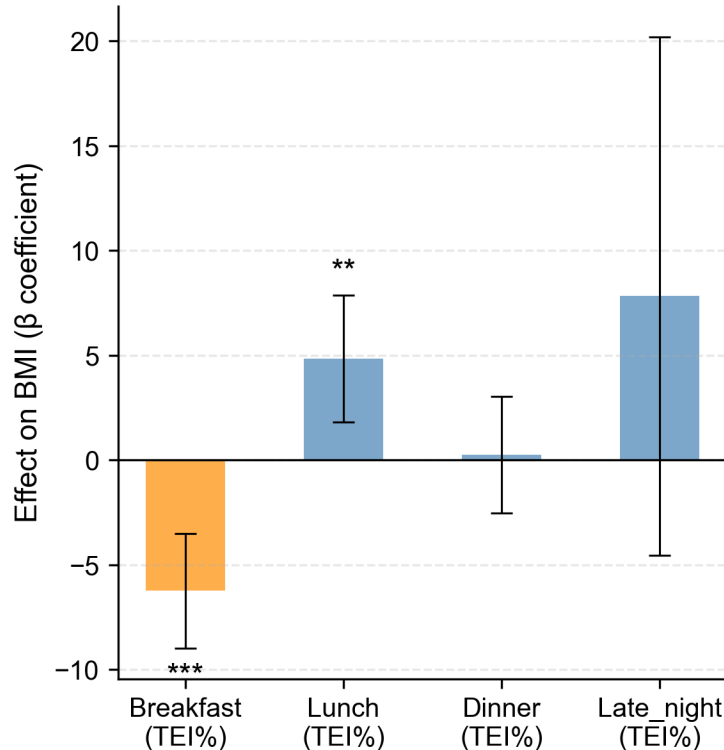
Meal timing associations on dietary quality and glucose response

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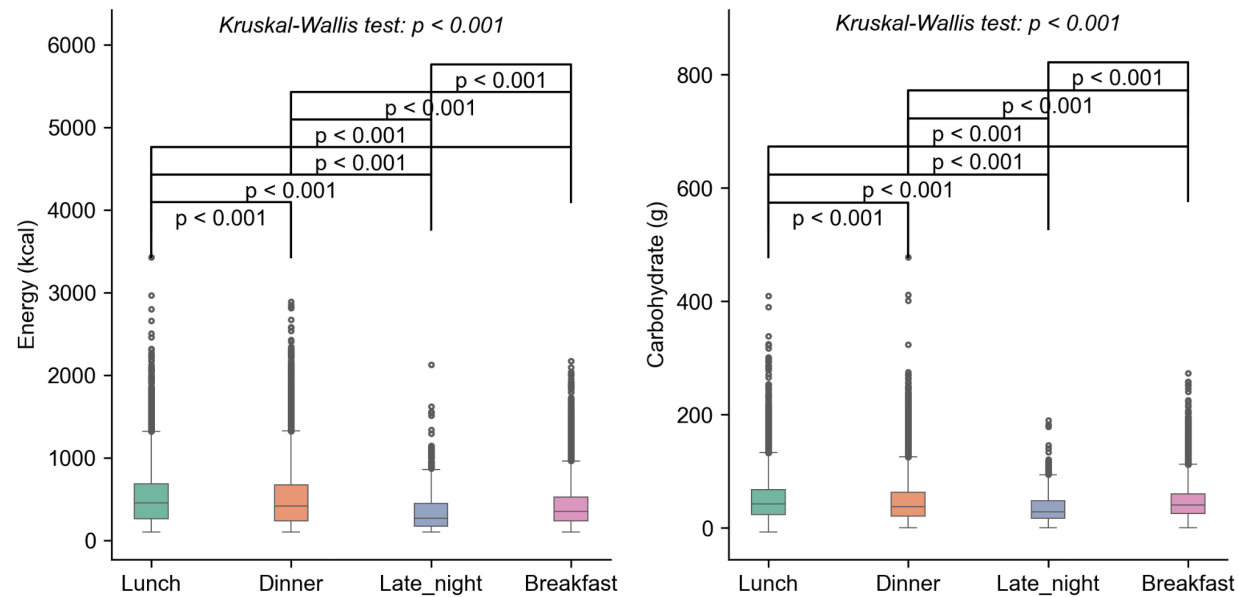
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Supplementary Figures



Supplementary Figure 1. Effects (β coefficients) from linear models (n=962 independent

samples/participants) showing associations between energy intakes from different meal-periods with BMI. Error bars represent 95% confidence intervals around β ; p-values are from two-sided Wald tests (breakfast, $p = 8.42\text{e-}06$; lunch, $p = 0.001$; dinner, $p = 0.85$; late night, $p = 0.21$).



Supplementary Figure 2. Boxplots of meal energy (kcal) and carbohydrate content (g) stratified by meal type (Breakfast, Lunch, Dinner, Late-night). Boxes indicate median and interquartile range; whiskers extend to $1.5 \times \text{IQR}$; individual points denote outliers. Global Kruskal-Wallis tests ($p < 0.001$) and pairwise two-sided Mann-Whitney U tests (FDR-corrected; $p < 0.001$) are annotated.

Supplementary Table 1. Dietary quality, diversity, and regularity metrics used in this study.

Metric	Description	Input data	Citation
Healthy Eating Index (HEI-2020)	Composite score of diet alignment with the 2020–2025 Dietary Guidelines for Americans, scored across 13 food group and nutrient density components (range 0–100)	Per-day food group and nutrient intake	Shamir et al.
Daily HEI	Participant-level mean of per-day HEI scores, capturing day-to-day consistency in diet quality	Daily HEI scores across all tracking days for a participant	Singh et al.

Plant-based Diet Index (PDI)	Score assigning positive weights to all plant foods and reverse weights to animal foods	Quintile-binned intakes of plant- and animal-food groups	Satija
Healthful Plant-based Diet Index (hPDI)	Score assigning positive weights to healthy plant foods and reverse weights to less healthy plant foods and animal foods	Quintile-binned intakes of plant- and animal-food groups	Satija
Dietary Diversity Score (HDDS)	Count of food categories consumed in a day	Non-zero food categories consumed in a day	Heida
Shannon entropy (nutrition)	Captures the uncertainty in predicting the food category of a randomly selected kilocalorie	Relative abundance of kilocalories across food categories consumed in a day	Shan al., 20
Simpson index	Probability that two randomly selected kilocalories belong to the same food category	Relative abundance of kilocalories across food categories consumed in a day	Keylo al., 20
Gini-Simpson index	Probability that two randomly selected kilocalories belong to different food categories (1 – Simpson)	Relative abundance of kilocalories across food categories consumed in a day	Borko
Berger-Parker index	Proportion of daily kilocalories from the most-consumed food category	Relative abundance of kilocalories across food categories consumed in a day	Khoul
Quantitative Index for Dietary Diversity (QUANTIDD)	Evenness of kilocalorie distribution across food categories	Relative abundance of kilocalories across food categories consumed in a day	Katar
Modified Functional Attribute Diversity (MFAD)	Diversity of macronutrient and fiber profiles across consumed food items	Carbohydrate, fat, protein, and fiber content (in grams) of each consumed food item	Rema
Coefficient of variation (CV) of food group intake	Day-to-day variability in intake of a given food group, computed as the ratio of the standard deviation to the mean of daily intakes per participant	Daily intake (in grams) of each food group across tracking days	Singh

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