BETTER ASSISTANCE IN CRISES RESEARCH

# Research Briefing

Issue 04 | March 2025

# Is poverty underestimated because males and females report food security and food expenses differently?

***Does the gender of household survey respondents affect the accuracy of reported food consumption?*** Findings from a randomisation-based survey of beneficiary households in the Productive Safety Net Programme in Ethiopia suggest that it might – with implications for the targeting of such programmes. Females reported greater food insecurity and males reported higher food expenditures. Such striking gender differences raise the possibility that poor households may be classified as non-poor, or less poor than they actually are. Survey design and respondent selection should therefore aim to minimise bias to ensure the poorest and most food-insecure households benefit from assistance.

**Camelia Vasilov**
Laterite

**Rachel Sabates-Wheeler**
Institute of Development Studies

**Mats Hoppen-brouwers**
Laterite

## Key messages

- Randomised selection of respondents' gender within the same household when conducting survey work is uncommon, yet it can have significant policy implications for poverty programmes.
- Striking gender differences were revealed in a 2022–23 survey of Productive Safety Net Programme (PSNP) beneficiaries from the Ethiopian regions of Amhara and Oromia, which employed respondent randomisation.
- Women report higher levels of food insecurity based on the Food Insecurity Experience Scale. Men, however, report higher expenditures for foods consumed both within and outside the household.
- Women report a wider variety of foods eaten within the household, consistent with gendered expectations on household food acquisition and preparation. Reported calories consumed per capita within the household were similar for both genders, but this does not imply the same dietary diversity or value.
- The findings suggest that social protection programmes, like the PSNP, will benefit from a gender-sensitive design in terms of targeting, distribution and evaluation. Data collection for purposes of poverty measurement must consider who is the most appropriate and knowledgeable respondent as doing so will have significant impacts on the lives of the poorest households.

## Study justification

### What we know from other studies

We know that the gender of the household head matters for food and nutrition outcomes. Female-headed households in Ethiopia have worse dietary diversity (Argaw *et al.* 2021) and nearly twice the odds of food insecurity compared to male-headed households (Negesse *et al.* 2020). However, scant evidence exists on how the gender of the respondent – not of the household head – affects the accuracy of food reporting in household surveys.

In northern Ghana, women tend to estimate higher levels of food insecurity compared to men within the same households (Vercillo, Carr and Moerschell 2022). This gender gap in reporting food insecurity persists even after controlling for household socioeconomic status, suggesting that women and men may have different perceptions and experiences of food insecurity. Regarding consumption and calorie intake, underestimation is common across multiple dietary assessment methods for both men and women (McKenzie *et al.* 2021). A study in Bangladesh found that the Household Consumption Expenditure Survey underestimated women's share of household foods compared to a thorough recall of foods consumed over the previous 24 hours (Harris-Fry *et al.* 2022). However, a large-scale US-based study found that considering gender-specific portion sizes improved the accuracy of absolute nutrient intake assessments in food frequency questionnaires for both men and women (Kang *et al.* 2019).

Reporting on food consumption and expenditure can vary according to gendered responsibilities. Women usually have primary responsibility for food provisioning and meal preparation in many societies (Masselus and Fiala 2024). This gendered division of labour means that women may be more attuned to food shortages and overall food security status. Additionally, when food is scarce, women may adopt coping strategies such as reducing their own food intake to protect their children (Piperata *et al.* 2013), which can shape their perceptions of food insecurity.

Gender differences in awareness of nutritional information, such as portions and calorie labelling, have also been documented. Studies show that females are generally more conscious of calorie intake and dietary choices, which can influence reported food consumption and expenditure patterns (Grzymisławska *et al.* 2020; Alotaibi *et al.* 2023).

The vast majority of research on gender and food reporting compares responses from male and female respondents – usually household heads from different households. A methodology based on randomised selection of respondent gender within the same household is uncommon. One exception is Masselus and Fiala (2024) who used an experimental protocol for respondent selection for their study in Uganda. Their study showed differences between the food consumption reported by spouses, although results are mixed, and the authors encourage further research.

Another study highlights the significant impact that the identity of the survey respondent – particularly their gender and age – has on survey responses (SLRC 2015). The study found considerable geographical variation across the countries. Gender differences in responses were more pronounced in African countries (the Democratic Republic of the Congo and Uganda) than in Asian countries (particularly Nepal), suggesting that the manifestation of gendered reporting can vary significantly by context. While our study is based only on respondents from two regions of a single country, and is not representative, its research design and preliminary findings suggest the value of a deeper dive into the topic of gender effects on survey responses.

### Our study

We conducted primary quantitative data collection with beneficiaries of the PSNP from the Ethiopian regions of Amhara and Oromia in 2022–23. We focused on household outcomes, access to social assistance, and the impacts of compound shocks such as spillovers from the recent Tigray conflict. The PSNP aims to help households in chronic food insecurity to maintain their assets and is operational across these and other regions of Ethiopia.

Our survey was designed to enable the investigation of the impact of respondent gender on poverty and food metrics at the household level. We employed a novel experimental protocol that required switching from the male household head to a female adult respondent in the same household at specific, randomised points during each survey

interview, contingent upon the availability of the designated female respondent. By the time the food modules were administered, the respondent was female in nearly 90 per cent of the cases. To guard against the effect of household head gender (whereby female-headed households tend to be poorer and affected by more shocks), our analysis here is only on male-headed households where the initial respondent was male. That is a total of 1,138 households, for which in the food modules of the survey, 87 per cent of respondents were female and 13 per cent male.

To ensure the sample was statistically balanced, we ran checks to test for significant differences between the households where the male ended up being interviewed rather than the female. No significant differences were found in the education level, age of the household head, land ownership, wage-based employment, or total household asset index. The two sub-samples had similar poverty rates of around 72 per cent at the US$1.25 threshold (2011 purchasing power parity adjusted). We use this measure for consistency with the study's baseline calculations. However, households where the female was interviewed were larger in size and had higher dependency ratios. Therefore, we are using per capita figures in the analysis to account for household size differences, except for the food security indicator which is a holistic view of the household from the respondent's perspective

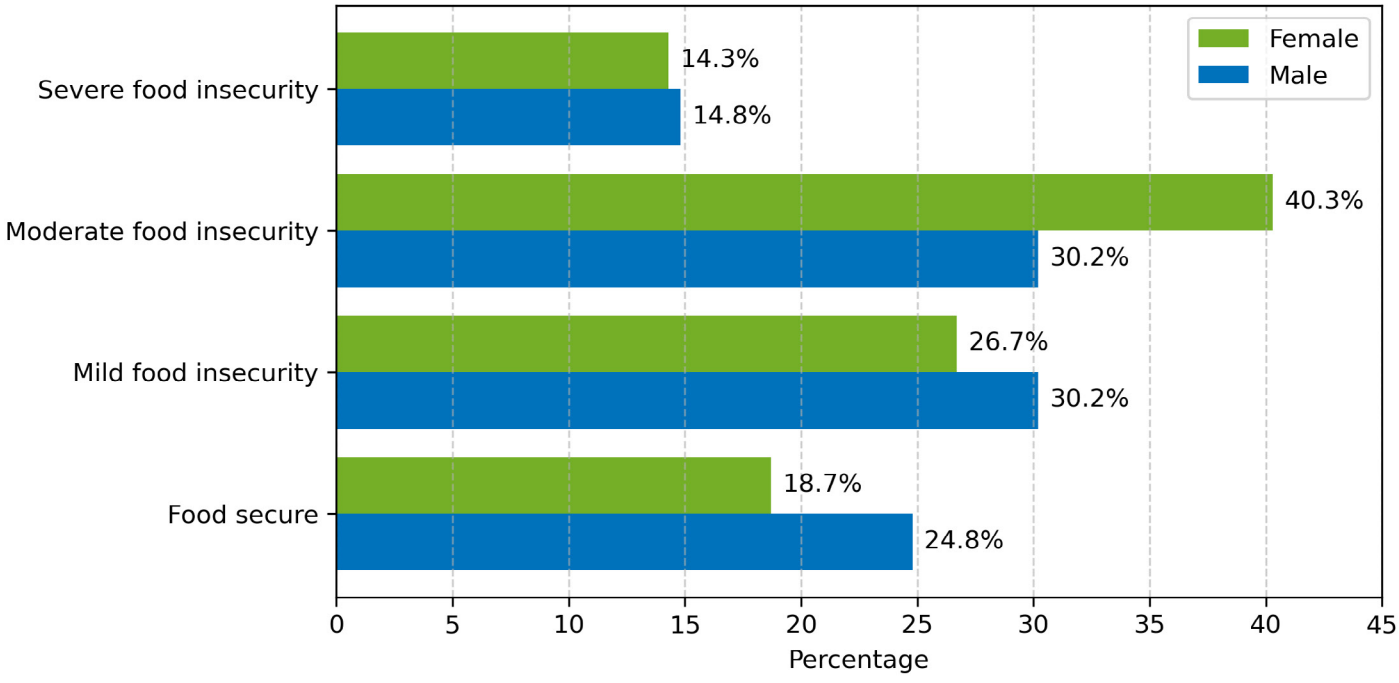
## Findings

### Females report more household food insecurity

We calculated household-level food insecurity over the past month using the standard Food Insecurity Experience Scale. Figure 1 shows the percentage distribution of food insecurity status by gender of the respondent. A higher percentage of male respondents (24.8 per cent) report their households as **food secure** compared to female respondents (18.7 per cent). Conversely, 40.3 per cent of female respondents report **moderate food insecurity** compared to 30.2 per cent of male respondents (p-value 0.028). Yet the reporting for severe food insecurity is almost identical between genders, with males at 14.8 per cent and females at 14.3 per cent.

These differences suggest that female respondents perceive or experience higher levels of moderate food insecurity compared to their male counterparts. The alignment in severe food insecurity reporting indicates that when food insecurity reaches critical levels, both genders perceive it similarly.

**Figure 1: Reported household food insecurity by gender of the respondent**




Source: Authors' own. Created using project data.

**Table 1: T-tests on food metrics: expenditure and calorie intake per capita**

| Description | Group | Mean | p-value |
|---|---|---|---|
| **Self-reported value of food (birr) consumed outside the home per capita** | Male | 2.4 | 0.012 |
| | Female | 0.8 | |
| **Self-reported total food expenditure (birr) of household members per capita, including value of food consumed at home and outside** | Male | 1,016 | 0.048 |
| | Female | 694 | |
| **Market value of food (birr) consumed at home per capita*** | Male | 1,016 | 0.029 |
| | Female | 700 | |
| **Calories (kcal) of food consumption per capita per day*** | Male | 1,932 | 0.495 |
| | Female | 2,008 | |

Source: Authors' own. Created using project data.
Note: *Values calculated based on the self-reported consumed amounts of each food.

## Males report higher household food expenditure

In our survey, we collected data on the quantities of each type of food consumed within households over the previous week. By combining these figures with market prices, we calculated the **market value of the food consumed**. The quantities consumed also served to calculate the **calorie intake**. We also inquired specifically about the quantity and cost of purchases of each type of food in the same period to determine actual in-household **food expenditures**. In addition, we asked about payments for any **meals eaten outside the home** by household members.

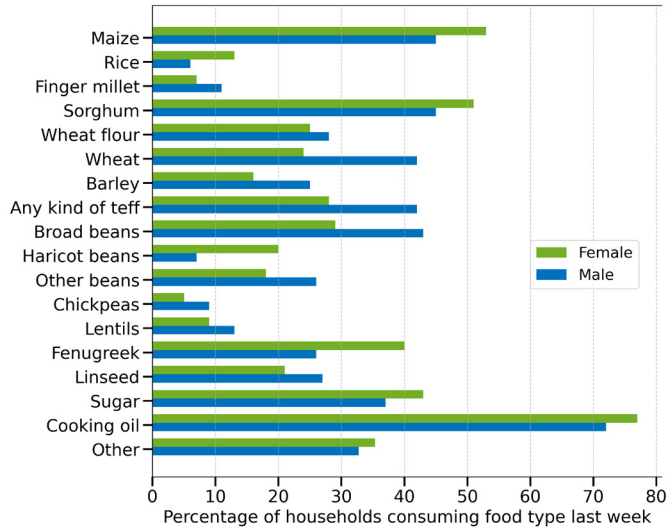
Our analysis reveals that males consistently report higher monetary values across several metrics, including spending on meals outside the household, household food purchases, and the market value of food consumed at home (Table 1).

To start with, males report spending, on average, three times as much as females on **food eaten outside the household**. It is likely that males spend significantly more than females on food consumed outside the home, due to higher rates of mobility, work away from the homestead, or conflict dynamics that keep women at home more. Also, women may be unaware of what household members including men spend outside the house and are thus underreporting this expenditure. However, this accounts for a small proportion of total household food expenditures, as most of the difference arises from spending on food to be consumed at home.

Indeed, males report significantly higher **household spending on food** per capita than females – 1,016 birr compared to 694 birr (p-value 0.048). The systematically larger food expenditures reported by men present a challenge for broader measures of poverty. Food consumption expenditures are a key component in calculating the World Bank's poverty lines, and whether households are placed above or below poverty thresholds. If men spend more on food outside the homestead, accurately factoring their individual expenditures into household poverty calculations becomes challenging. Also, if male survey respondents are prone to over-reporting per capita household food expenditures, this must be considered to avoid underestimating household poverty.

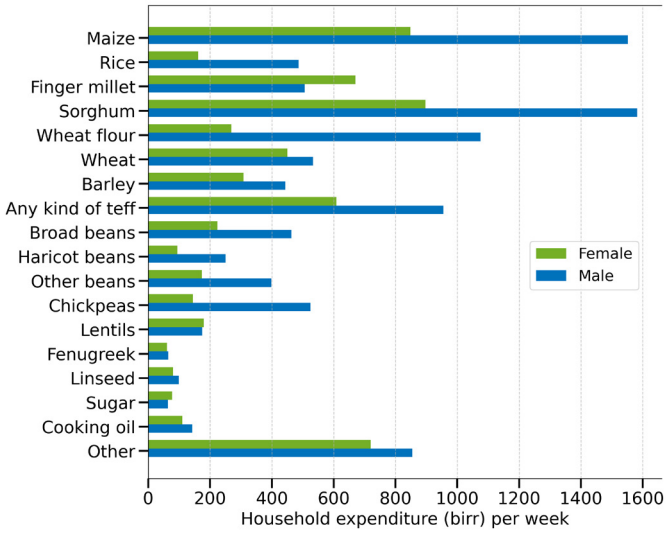
> **"Males consistently report higher monetary values across several metrics, including spending on meals outside the household, household food purchases, and the market value of food consumed at home."**

**Figure 2: Consumption of food types in the previous week by gender of the respondent**




Source: Authors' own. Created using project data.

**Figure 3: Expenditures on food types in the previous week by gender of the respondent**




Source: Authors' own. Created using project data.

Why might men report higher household food expenditures? Men may be more likely to recall bulk purchases, while women may focus on smaller, frequent purchases, leading men to report higher aggregate spending. Another explanation might be that in conflict-affected areas like the study area, men may be more likely to visit markets for security reasons, potentially giving them greater awareness of prices and quantities purchased.

Alongside these potential explanations, we propose that differences in the recall of food types and food quantities are an important factor, which we explore below.

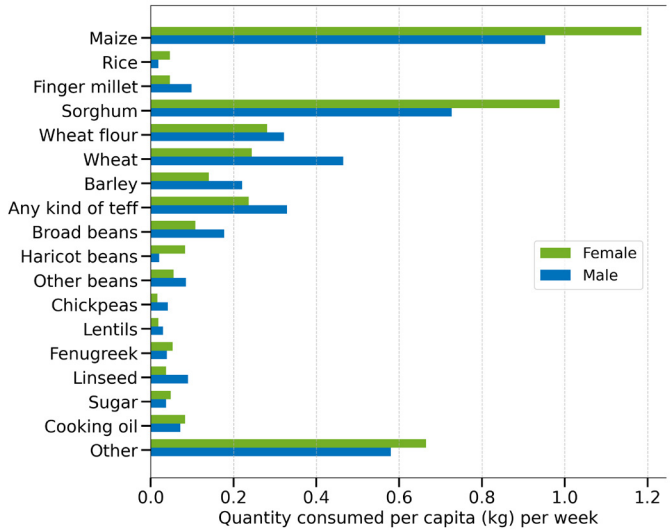
In terms of **calorie intake**, per capita figures reported by both men and women show no significant difference, with daily values being nearly identical. Both genders indicate similar distributions of calorie intake, with most households falling within the expected range of 1,000 to 3,000 adult equivalent units (AEU) kcal per day. However, men are more likely to report outlier values, such as 4,000+ kcal per day. The fact that average calorie intake data is generally comparable between male and female respondents despite their disparities in reporting food insecurity and food monetary values presents another puzzle that may be solved by a deeper look into the reporting by specific foods.

## Males and females differ in the diversity and quantities of foods reported

***What factors drive the differences in the overall food metrics based on gendered reporting?*** The findings suggest that males have a qualitatively different perspective than females on the food consumed within the household. Women tend to report a wider variety of food types being consumed over the previous week (Figure 2), while men typically report higher quantities consumed and higher expenditures for many of the same foods (Figure 3). For example, men reported significantly higher spending on food items like maize, rice, and cooking oil, even though women indicate greater prevalence of consumption. Interestingly, females report higher consumption of vegetables, which are nutrient-dense but may not be high-cost.

The data shows clearly that male respondents often report higher **quantities of food** consumed at home compared to female respondents. Specifically, men report statistically significant higher quantities (in kilogrammes) for nine food types, while women report higher quantities for only four (Figure 4). For the remaining food types, although the differences are not statistically significant, men still tend to report higher quantities, which contributes to the overall total.

**Figure 4: Quantity consumed in the past week by gender of the respondent**




Source: Authors' own. Created using project data.

This difference may be due to several factors. Firstly, men may use larger portion sizes as a mental reference, leading to overestimations of consumed amounts. While we do not have specific data to test this, previous research (Kang *et al.* 2019) suggests that using gender-specific portion sizes improves accuracy in individual food surveys, indicating that similar biases could occur in household-level reporting.

Secondly, women may have more accurate recall of quantities consumed due to their roles in cooking and food management. In our survey, women recalled more food types on average, including those used in cooking such as onions, tomatoes, peppers, and oil. Additionally, women's calorie reports showed fewer outliers, suggesting greater precision in at least some aspects of food management.

Lastly, social pressure may play a role. Men might feel a need to report higher household food consumption to align with expectations of being effective providers. Women may either feel less pressure to do this or even downplay consumption to highlight household vulnerability. Given the comprehensive and detailed nature of our survey, it seems unlikely that respondents could consistently inflate or deflate quantities across numerous food types. However, it is possible that specific foods, particularly those associated with status, are reported differently by men and women.

**"A large-scale US-based study found that considering gender-specific portion sizes improved the accuracy of absolute nutrient intake assessments in food frequency questionnaires for both men and women."**

Men's reporting of larger quantities of the same foods being consumed can result in higher perceived per-item **expenditures**, particularly since the expenditure questions were asked immediately after the consumption questions for each food item. This can yield overall larger monetary metrics of food for households where the male was interviewed.

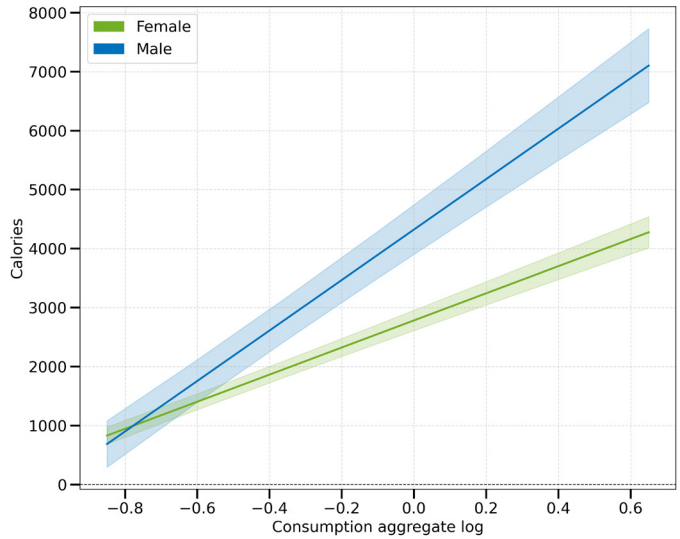
Men reporting fewer types of food but in larger quantities than women is a likely reason for why the overall calorie intake is similar between genders. Our data supports this observation. The main contributors to **calorie intake** across both groups are grains, beans and legumes, sugar, and cooking oil. Among these, men report significantly higher per-capita monthly consumption for seven food items, while women report higher quantities for only three. The higher quantities reported by men directly translate into a larger calorie share. For instance, men reporting roughly double the quantities of finger millet, wheat, beans, and linseed compared to women results in a doubling of the calories derived from these foods.

Apart from calories and expenditures, the gendered perspective on food reporting can influence another important food metric: **dietary diversity**. We calculated a dietary diversity measure based on a seven-day recall, using the same method as in the standard 24-hour recall used in the Household Dietary Diversity Score (HDDS). Both male and female respondents show low diversity scores, given the scale's maximum of 12. However, women's more thorough reporting of certain foods, such as vegetables and dairy products, results in statistically significantly higher dietary diversity scores (5.39 vs 5.09). Consequently, relying solely on HDDS from male respondents could lead to an underestimation of household dietary diversity. This again highlights the importance of considering respondent gender to avoid biased interpretations of household nutrition.

## Food reporting, gender and poverty

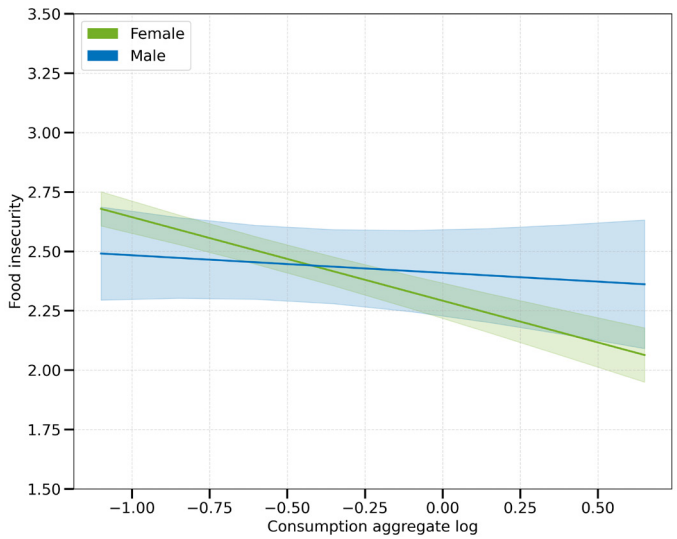
***Does household poverty level influence men's and women's food reporting?*** In our sample, 72 per cent of households are under the poverty line, although there is substantive variation. In Figures 5–8, the predictive margins show how the previously analysed food metrics are related to socioeconomic metrics like household size and the log of aggregate consumption per capita. As expected, for households with both male and female reporting, higher consumption levels correspond to better calorie intake per capita and lower household food insecurity; household size is associated with increased food insecurity.

### Figure 5: Predicted calories by per capita consumption aggregate log




Source: Authors' own. Created using project data.

### Figure 7: Predicted food insecurity by per capita consumption aggregate log

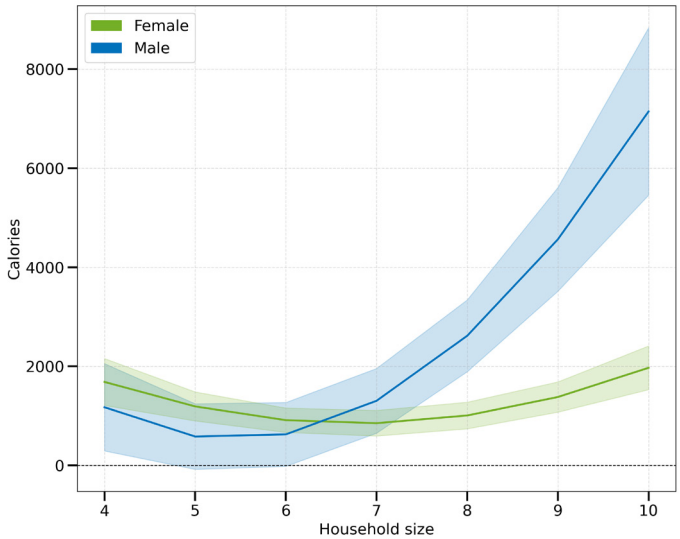



Source: Authors' own. Created using project data.

However, men tend to report higher calorie intake values (and food-related expenditures, which follow the same trend), especially in larger households and at higher consumption levels. This is potentially an indication of recall issues like over-reporting or focusing on larger expenditures.

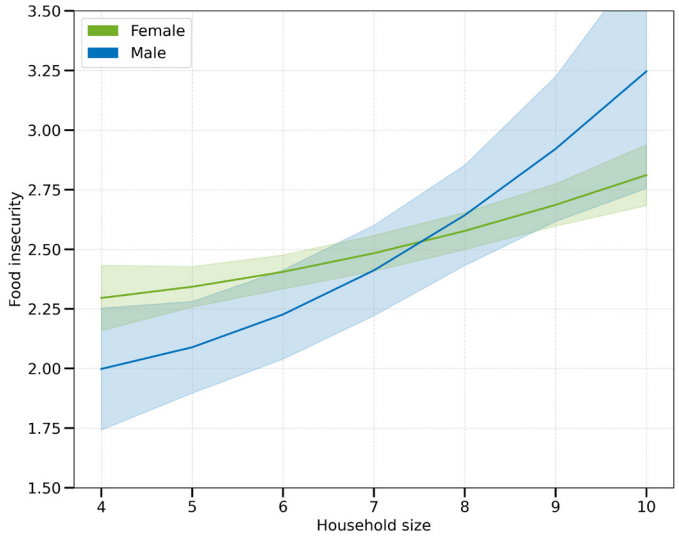
Women, on the other hand, demonstrate more consistency in the reporting of calories per capita but also show a steeper decline of food insecurity as the consumption aggregate improves. This further suggests that women have a heightened sensitivity to the holistic food insecurity scale.

### Figure 6: Predicted calories by household size




Source: Authors' own. Created using project data.

### Figure 8: Predicted food insecurity by household size




Source: Authors' own. Created using project data.

## Policy recommendations

The results show that female respondents report a wider variety of foods consumed within the household, which aligns with their traditional roles in managing household food preparation. They also report higher levels of food insecurity. However, males tend to report larger quantities consumed and higher food expenditures, both for food consumed at home and outside. Given these results, we recommend the following measures to improve food security assessments and interventions – and suggest a need to rethink some poverty metrics and gendered expectations of poverty.

1. **Improved household survey design** on food security and consumption to account for gender-specific differences in reporting. Including both male and female respondents in food security surveys could prevent gendered under- or over-reporting.
2. **Holistic understanding of food expenditure and consumption** to account for how gender roles shape the division of labour and responsibilities within households and the wider food environment, which extends to how food consumption and expenditure are perceived and reported. Further studies should focus on the drivers of gendered differences in food reporting.
3. **Gender-sensitive food security programmes** since women are more attuned to moderate food insecurity. Such programmes could benefit from focusing on women's unique coping strategies and perceptions to ensure a more nuanced understanding of household vulnerabilities. If women employ self-sacrificing strategies to shield their children from food scarcity (Piperata *et al.* 2013), this is likely to appear in their assessments of household-level food insecurity.

Our results show clearly that, compared to female adults within male-headed households, male respondents over-report food expenditure and perceive that the household faces less food insecurity. If it is the case that female respondents provide a more accurate picture of the whole household's food situation (which is open to some debate), these results have dramatic implications:

4. **Rethinking poverty metrics.** On average, taking a male respondent's view on household food expenditures and food security would underestimate the poverty ranking of that household relative to others. In other words, higher male-reported expenditures mean the household would be ranked as richer compared to others. This could result in the exclusion of households from poverty assistance programmes. In contrast, had the females responded to the targeting surveys, the same households would more likely be recognised as eligible for assistance.
5. **Questioning the idea of accuracy itself.** A key takeaway of studies like the SLRC (2015) is not that men or women provide more accurate answers, but that the person being asked matters, even in response to supposedly objective questions (such as the number of household assets). This raises deeper epistemological questions about what is considered 'accurate' or 'the truth' in data collected through household survey methods.
6. **Reassessing gendered poverty differences.** The results challenge long-held assumptions that in much of Africa, male-headed households are consistently better off than female-headed households across poverty metrics. These assumptions rest on household poverty surveys that compare responses from female-headed households to male-headed households (notwithstanding caveats that results are nuanced by the type of women-headed households). But the differences may not be as pronounced as previously thought, when female-headed households' responses are compared to those from female respondents in male-headed households. This suggests that the disparities between these households may not be as gendered as thought. We must stress that our analysis and findings are based on a standard understanding that each household has a head, which is easy to self-identify, and that this identification corresponds to valid underlying household dynamics. A more nuanced understanding would appreciate the variety of household structures, and use more evidence-based ways of selecting whom to interview.

Institute of Development Studies, Library Road, Brighton, BN1 9RE, United Kingdom +44 (0)1273 606261 ids.ac.uk

IDS is a charitable company limited by guarantee and registered in England. Charity Registration Number 306371. Charitable Company Number 877338.

**Further reading**

Alotaibi, N.M. *et al.* (2023) 'A Cross-Sectional Study of Gender Differences in Calorie Labeling Policy among Students: Dietary Habits, Nutritional Knowledge and Awareness', *Nutrients* 15.4: 879, DOI: 10.3390/nu15040879 (accessed 24 January 2025)

Argaw, T.L.; Phimister, E. and Roberts, D. (2021) 'From Farm to Kitchen: How Gender Affects Production Diversity and the Dietary Intake of Farm Households in Ethiopia', *Journal of Agricultural Economics* 72: 268–92, DOI: 10.1111/1477-9552.12404 (accessed 24 January 2025)

Grzymisławska, M.; Puch, E.A.; Zawada, A. and Grzymisławski, M. (2020) 'Do Nutritional Behaviors Depend on Biological Sex and Cultural Gender?', *Advances in Clinical and Experimental Medicine* 29.1: 165–72, DOI: 10.17219/acem/111817 (accessed 24 January 2025)

Harris-Fry, H.; Lamson, L.; Roett, K. and Katz, E. (2022) 'Reducing Gender Bias in Household Consumption Data: Implications for Food Fortification Policy', *Food Policy* 110: 102279, DOI: 10.1016/j.foodpol.2022.102279 (accessed 24 January 2025)

Kang, M. *et al.* (2019) 'Considering Gender Differences in Portion Sizes to Improve the Accuracy of Nutrient Intakes from A Food Frequency Questionnaire', *Nutrients* 11.7: 1449, DOI: 10.3390/nu11071449 (accessed 24 January 2025)

Masselus, L. and Fiala, N. (2024) 'Whom to Ask? Testing Respondent Effects in Household Surveys', *Journal of Development Economics* 168: 103265, DOI: 10.1016/j.jdeveco.2024.103265 (accessed 24 January 2025)

McKenzie, B.L. *et al.* (2021) 'Investigating Sex Differences in the Accuracy of Dietary Assessment Methods to Measure Energy Intake in Adults: A Systematic Review and Meta-Analysis', *American Journal of Clinical Nutrition* 113.5: 1241–55, DOI: 10.1093/ajcn/nqaa370 (accessed 24 January 2025)

Negesse, A. *et al.* (2020) 'The Impact of Being of the Female Gender for Household Head on the Prevalence of Food Insecurity in Ethiopia: A Systematic-Review and Meta-Analysis', *Public Health Reviews* 41.17, DOI: 10.1186/s40985-020-00131-8 (accessed 24 January 2025)

Piperata, B.A.; Schmeer, K.K.; Hadley, C. and Ritchie-Ewing, G. (2013) 'Dietary Inequalities of Mother-Child Pairs in the Rural Amazon: Evidence of Maternal-Child Buffering?', *Social Science & Medicine* 96: 183–91, DOI: 10.1016/j.socscimed.2013.07.024 (accessed 24 January 2025)

SLRC (2015) *The First Round of the SLRC Panel Survey: The Process Paper*, London: Secure Livelihoods Research Consortium (accessed 24 January 2025)

Vercillo, S.; Carr, E.R. and Moerschell, L. (2022) 'Considering Gender Differences in Measuring Household Food Insecurity in Northern Ghana', *Development in Practice* 32.2: 551–65, DOI: 10.1080/09614524.2022.2056144 (accessed 24 January 2025)

This Research Briefing was written by **Camelia Vasilov**, **Rachel Sabates-Wheeler** and **Mats Hoppenbrouwers**. It was developed by the Better Assistance in Crises (BASIC) Research programme in collaboration with Laterite, a data, research and analytics firm specialising in research for social impact across East and West Africa and in Latin America.

BASIC Research is implemented by the Institute of Development Studies (IDS) and funded by UK International Development from the UK government. The opinions expressed are those of the authors and do not necessarily reflect the views or policies of IDS or the UK government.

© Institute of Development Studies 2025.

This is an Open Access briefing distributed under the terms of the Creative Commons Attribution 4.0 International Licence (CC BY), which permits unrestricted use or distribution in any medium, provided the original authors and sources are credited and any modifications or adaptations are indicated.

DOI: 10.19088/BASIC.2025.003