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## Wartime food availability in the Gaza Strip, October 2023 to August 2024: a retrospective analysis

### Briefing note

Pre-print: <https://www.medrxiv.org/content/10.1101/2024.10.21.24315753v1> (under peer review)

#### Background

As the war in Gaza enters its second year, assessing the extent to which food is available to the civilian population remains challenging due to conflicting reports and restrictions on monitoring. We conducted a **retrospective analysis of food availability during the first ten months of the war** in north and central-south Gaza. Our study estimated caloric availability per person by compiling data from six food sources: existing household stocks, humanitarian warehouses, private stores, agricultural production, airdrops and maritime deliveries, and trucked food aid. In a separate paper we will explore how caloric availability may have affected nutritional outcomes.

#### Key findings

##### Contribution of different food sources

- From October 2023 to May 2024, **trucked-in food** accounted for approximately **75%** of available calories in south-central Gaza, but only **19%** in northern Gaza.
- **Pre-existing stocks** held in households, markets, and humanitarian warehouses probably prevented a serious nutrition deterioration during the first two months of the war, especially in the north, where they accounted for about 53% of available calories.
- **Air drops and sea deliveries** made a minimal contribution, providing **only 3-4% of total calories** in the north and 1% in the south-central governorates, despite very high delivery costs.

##### Data integrity

- We found that that **UNRWA's data** on trucked food deliveries had high completeness and integrity; it consistently reported lower food weight amounts than the COGAT agency (Israeli Ministry of Defence), though trends were similar (Figure 1).
- **COGAT data** showed evidence of extreme digit heaping (rounded) or crude approximation, with most food consignments reported as exactly 15, 20, or 30 metric tonnes.
- Since 6 May 2024, Israel's takeover of border crossings has made it difficult for UNRWA to independently track cross-border goods movements, resulting in **likely underestimation**.

##### Caloric availability

- Northern Gaza experienced a **serious caloric deficit** during December-March 2024, with per-capita caloric availability falling below recommended intake levels for about 12 weeks (Figure 2);
- For about three months, people in northern Gaza had access to only half the calories they normally need each day, which can lead to severe health problem
- South-central Gaza faced a **moderate reduction**, with 4 weeks below the recommended intake
- Caloric availability began to recover in March 2024, reaching pre-war baseline levels in the north.

## Food composition and efficiency

- Considerable fluctuation was observed in the **mean caloric value** of food trucked into Gaza, with the lowest values estimated over the first six weeks of 2024, coinciding with the period of greatest food scarcity.
- A wide range of food items was imported into Gaza, but at least initially, very **limited amounts of specialised food** (for example Ready-to-Use Therapeutic Food) to prevent or cure acute malnutrition were included in shipments.

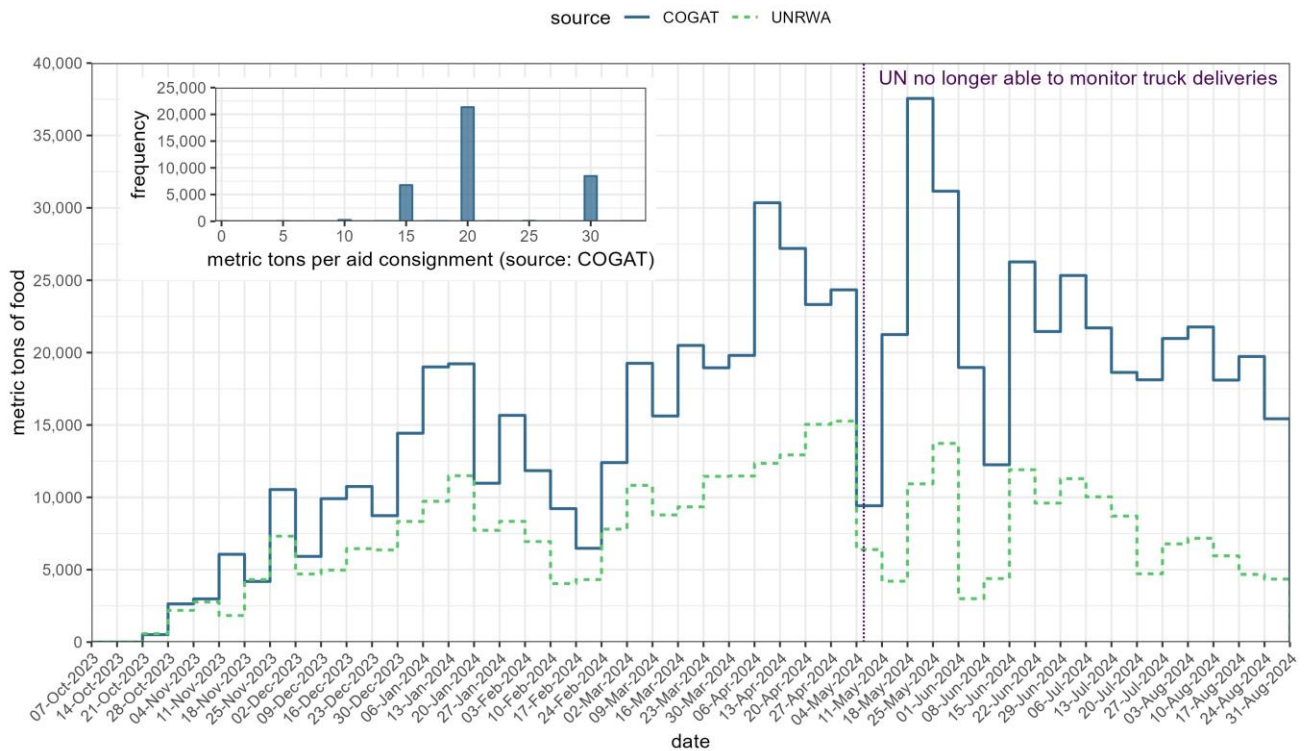


Figure 1. Comparison of food weight equivalent trucked into the Gaza Strip by week, according to UNRWA and the COGAT agency of the Israeli Ministry of Defence. The inset graph shows the distribution of number of metric tonnes per food consignment through any land crossing, according to COGAT data.

## Implications

- As the de facto occupying power, **Israel did not consistently ensure sufficient food availability** for Gaza's population.
- Caloric availability in the north significantly **improved from late March**, temporally coinciding with a key IPC food security report and the killing of World Central Kitchen staff.
- However, following the IDF's **Rafah operation in early May 2024**, there has been a worrying decline in food trucked into Gaza, as evidenced by both UNRWA and COGAT sources.
- COGAT's data do not appear sufficiently reliable to be used for decision-making. **UNRWA's role as an independent monitor of aid and commercial imports should thus be urgently reinstated** to ensure accurate situational awareness.
- As of **October 2024**, reinstated restrictions on food deliveries in northern areas will likely lead to a renewed decrease in caloric availability: this situation is particularly concerning as any stocks are likely to deplete quickly.
- **Strengthened coordination** of food deliveries may be warranted to ensure that whatever supplies are allowed in feature both nutritional diversity and high caloric value.

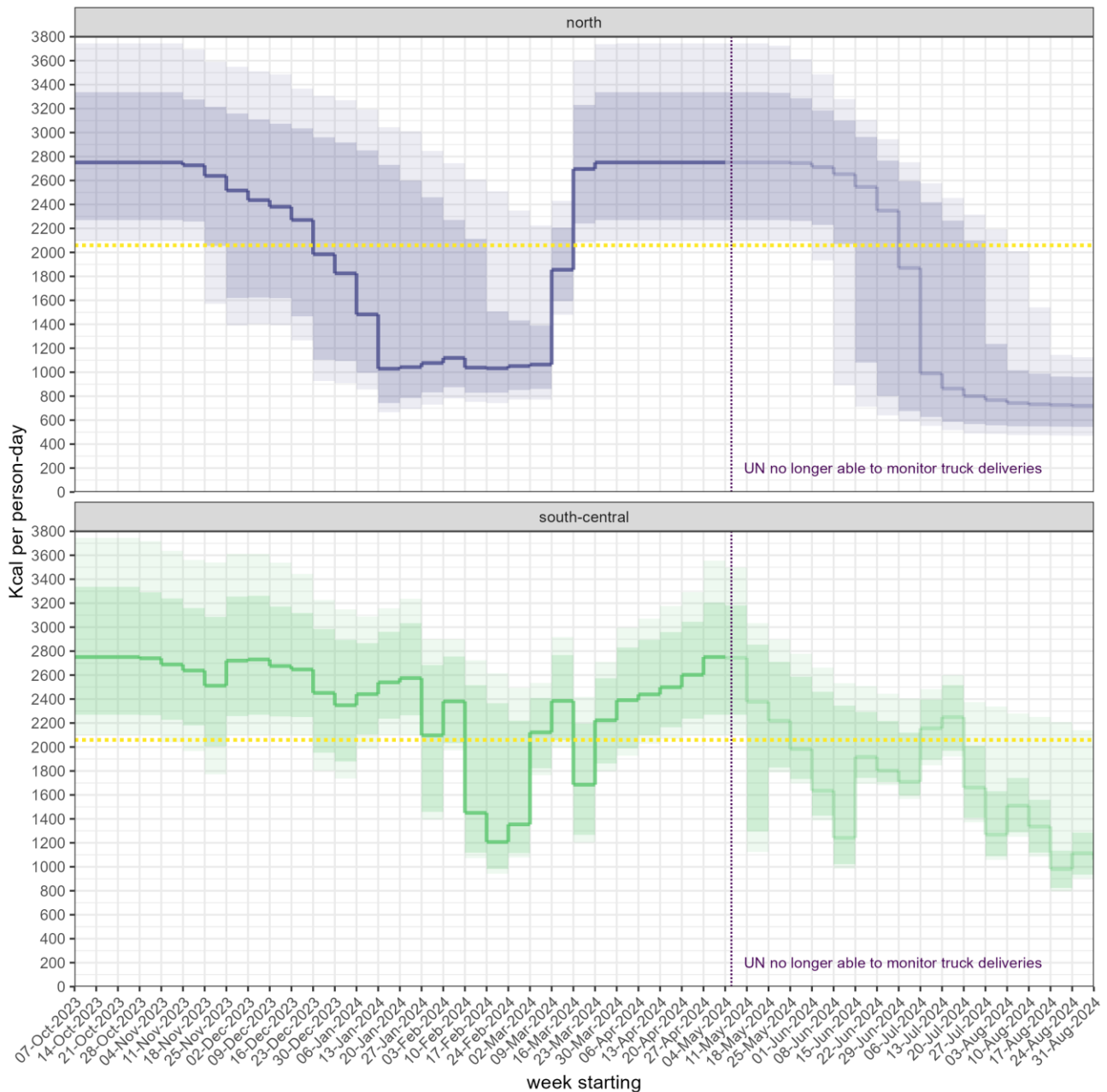


Figure 2. Estimated number of Kcal available per person-day in the north and south-central areas of Gaza, by week. Shaded areas indicate the 80% (darker shade) and 95% (lighter shade) uncertainty interval around the point estimate. The yellow dotted horizontal line denotes the theoretical mean caloric requirement per person-day, based on Gaza’s pre-war demographic characteristics. Point estimates are shaded more lightly after 5 May 2024 to denote data uncertainty and thus likely underestimation following the Rafah operation.

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All the data is publicly available, and the analysis can be accessed at this link: [https://github.com/francescochechchi/gaza\\_food\\_availability](https://github.com/francescochechchi/gaza_food_availability)

The findings do not necessarily represent the views of the funder, the Johns Hopkins University, or the London School of Hygiene & Tropical Medicine. Queries relating to the project should be directed to [info@gaza-projections.org](mailto:info@gaza-projections.org).