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Food Waste Patterns Across Households: Does Dietary Choice Matter?

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Abstract

Dietary shifts toward more plant-based consumption are widely regarded as necessary for improving the environmental sustainability of food systems, yet their implications for household food waste remain unclear. While food waste is often treated independently of dietary patterns, differences in food types, perishability, and preparation practices may influence both the quantity and composition of waste generated. This study investigates whether vegetarian and non-vegetarian households differ in their food waste levels using high-resolution data from digital quantification systems. The study uses a dataset consisting of continuously collected measurements of household food waste from digitally installed quantification systems that have collected data for at least 6 months and up to over a year. The systems record both weight and image data for each individual waste event, enabling high-resolution analysis of total waste generation and temporal variation. In addition to total quantities, waste composition is examined by separating avoidable and unavoidable fractions, allowing for assessment of reduction potential across dietary groups. Given the substantial day-to-day variability in household food waste, the study focuses on identifying systematic differences between dietary groups while accounting for fluctuations over time. Patterns in both average waste levels and variation are explored to better understand how dietary practices may relate to food waste behaviour. Additionally, the study analyses whether potential differences are consistent over time or driven by occasional high-waste events, which are known to disproportionately influence household averages. The study aims to provide insights into whether dietary patterns are associated with differences in food waste generation levels as well as food waste composition. By linking individual dietary choices to food waste, the study will contribute to a more nuanced understanding of how food waste is generated in different household contexts. The findings have implications for policy and intervention design, particularly in assessing whether food waste reduction strategies should be tailored to specific dietary groups or addressed through more general approaches targeting household behaviour. More broadly, the study contributes to understanding how shifts toward more plant-based diets may relate to food waste generation, highlighting potential synergies as well as trade-offs between sustainability goals.

Keywords: Sustainable diets, digital quantification, consumers

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