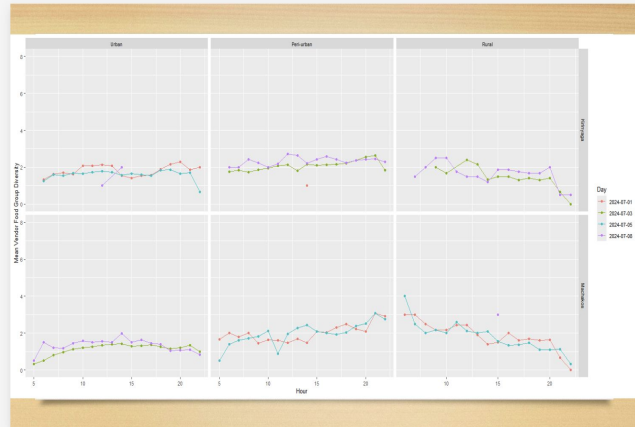


### Abstract

This study focuses on developing an External Food Environment Surveillance System (EFESS) to monitor temporal and spatial variations in food environments, specifically targeting informal and formal food vendors in Kirinyaga and Machakos, Kenya. The research aims to capture the dynamic nature of food environments in these secondary cities, especially in relation to gender dynamics, vendor mobility, and food availability across urban, peri-urban, and rural areas (Downs et al., 2022; Kimenju et al., 2015).

### Methods

The study employs temporal and spatial transects to monitor food vendors' activities, using GPS-based mapping and interviews to document vendor types, food diversity, and gender participation (Berkhout et al., 2023). Data was collected at different times of the day (morning, afternoon, and evening) on weekdays, weekends, and market days, and analyzed to reveal variations in vendor behavior and food group diversity across different regions. Capture-recapture methods will be used to track vendor mobility over time (Tilling, 2001).



**Results** Findings revealed significant temporal and spatial disparities in vendor counts and food group availability. Urban areas showed the highest vendor counts and food diversity, peaking in the late morning, while peri-urban areas exhibited more steady activity throughout the day. Rural areas were highly dependent on market days for vendor activity and food diversity (Kimenju et al., 2015). Female vendor participation was highest in urban settings but dropped significantly in rural areas. NCD risks were elevated in peri-urban and urban areas, with processed food availability contributing to higher health risks, especially during evenings (Reardon et al., 2021).

**Shortcomings** One vendor refused to be interviewed and protests disrupted data collection especially in Machakos. **Acknowledgements** This project is supported by IMMANA. Special thanks to all Profs, (Cornell & Purdue, KVC Kenya, enumerators, research assistants, and community participants in Kirinyaga and Machakos and Laidlaw Scholars Program.

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