Analysis of Disparities between household food waste metrics and their socioeconomic drivers in Chamwino District, Tanzania

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Background

→Household Food Waste(FW) is a major contributor to total FW; accurate measurement is crucial for policy.

→Self-reported methods (SR_{FW}) are inexpensive but biased; direct weighing (DW_{FW}) is more objective but resource intensive.

→Study compares SR_{FW} vs DW_{FW} and explores socioeconomic drivers of measurement bias in Chamwino.

Objectives

→Quantify agreement between SR_{FW} and DW_{FW} using Bland-Altman analysis.

→Identify socioeconomic determinants of discrepancies (regression analysis).

→Provide policy recommendations.

Methods & Data

→***402*** randomly selected households.

→ DW_{FW} households collected aggregate FW in provided bags for 5 consecutive days; weighed daily.

→SR_{FW} questionnaire-reported estimates of edible and inedible household FW.

→***Analysis***: Non-parametric Bland-Altman for agreement; linear regression (robust SE & bootstrapping) to explain $SR_{FW} - DW_{FW}$ bias; sensitivity analysis with Cook's D.

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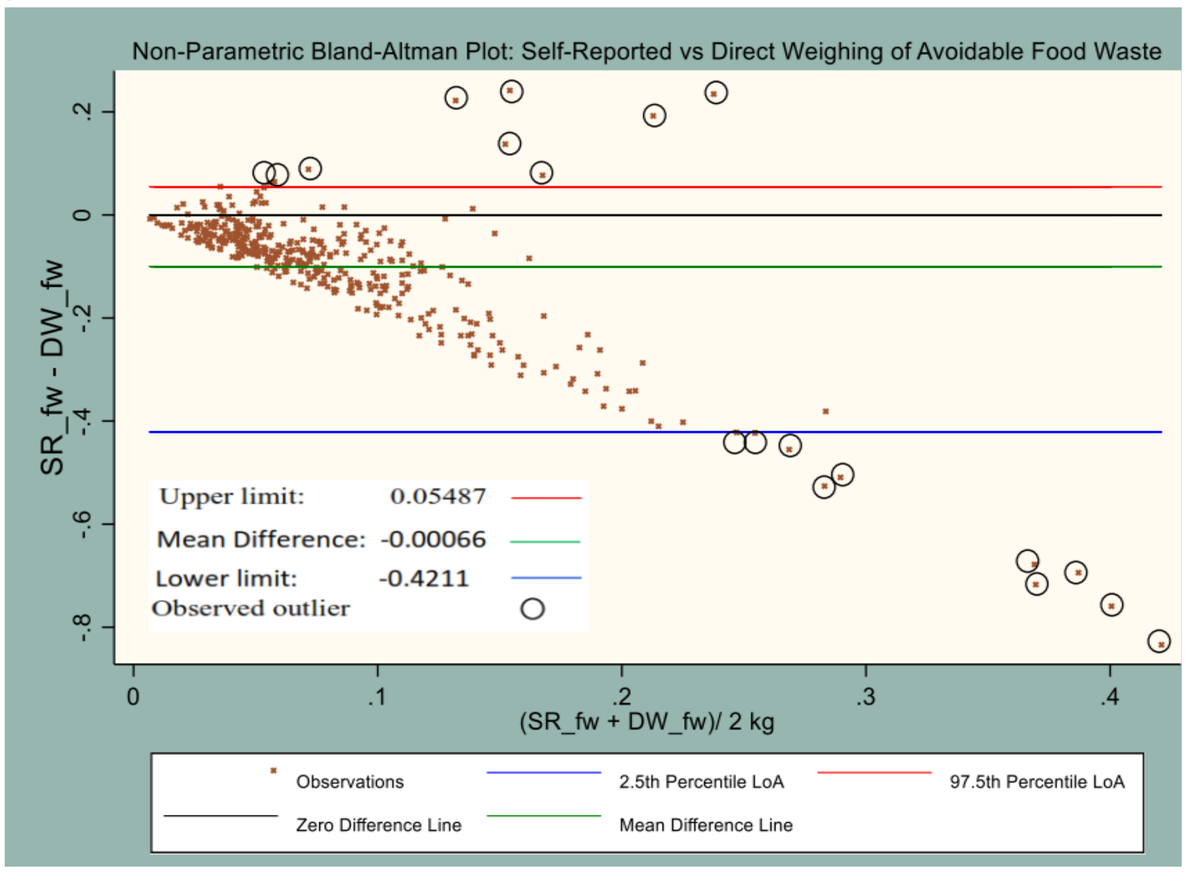


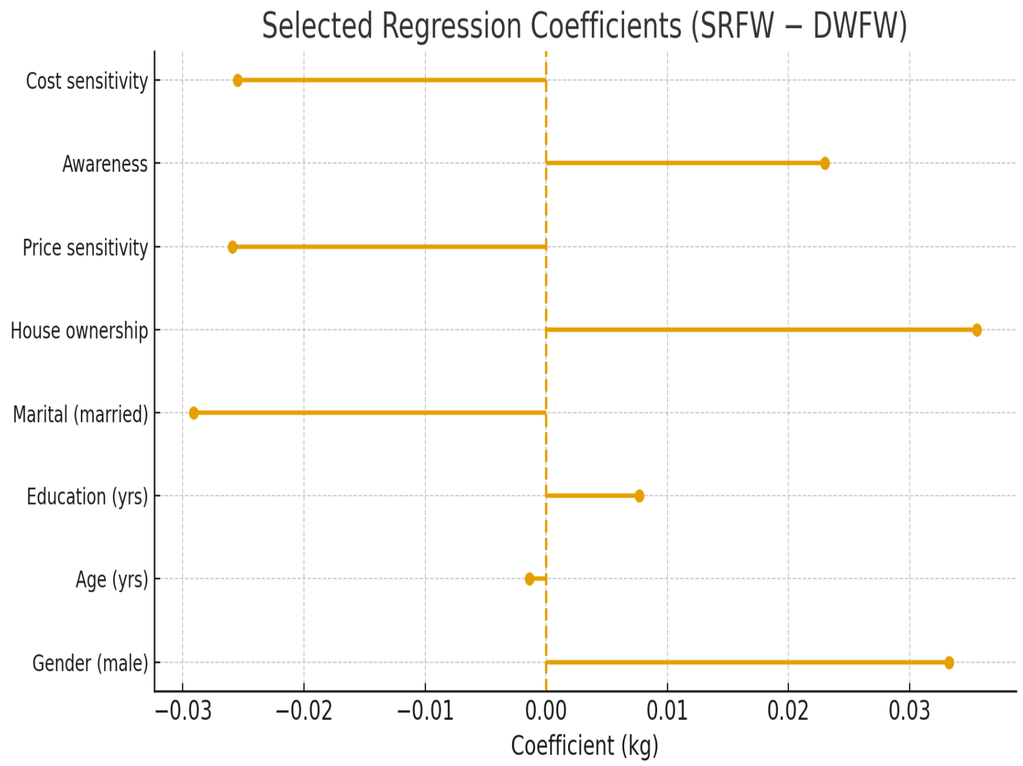
Key Numerical Results

→ Mean SR_{FW} (edible): 0.032703 kg • Mean DW_{FW}: 0.132769 kg

→ Bias ($SR_{FW} - DW_{FW}$): 0.100067 kg (SR_{FW} underestimates DW_{FW})

→ Limits of Agreement (2.5th–97.5th percentile): −0.421 to 0.055 kg

→ 19 observations outside LoA; evidence of -ve proportional bias (slope = −1.645, p<0.001).



Policy Implications & Recommendations

→Prioritise objective measurements

→National protocols for household FW measurement adapted to local contexts.

→Targeted awareness campaigns (men, youth, unmarried households) and promote price & cost consciousness.

→Support community-level interventions (food sharing, composting), improved storage, and integration with food security plans.

→Use findings to inform SDG 12.3 monitoring and local FW reduction programs.

References

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