



Food Environment Drivers of Fruits and Vegetable
Consumption in Tanzania: The Households' Income
Elasticity of Demand

Eward Mushi

Sokoine University of Agriculture (SUA), Tanzania



Introduction

Prevalence of malnutrition

- Undernourishment (TP): 23.8%
- Obesity (AP): 12.6%
- Iron-deficiency anemia: 25%

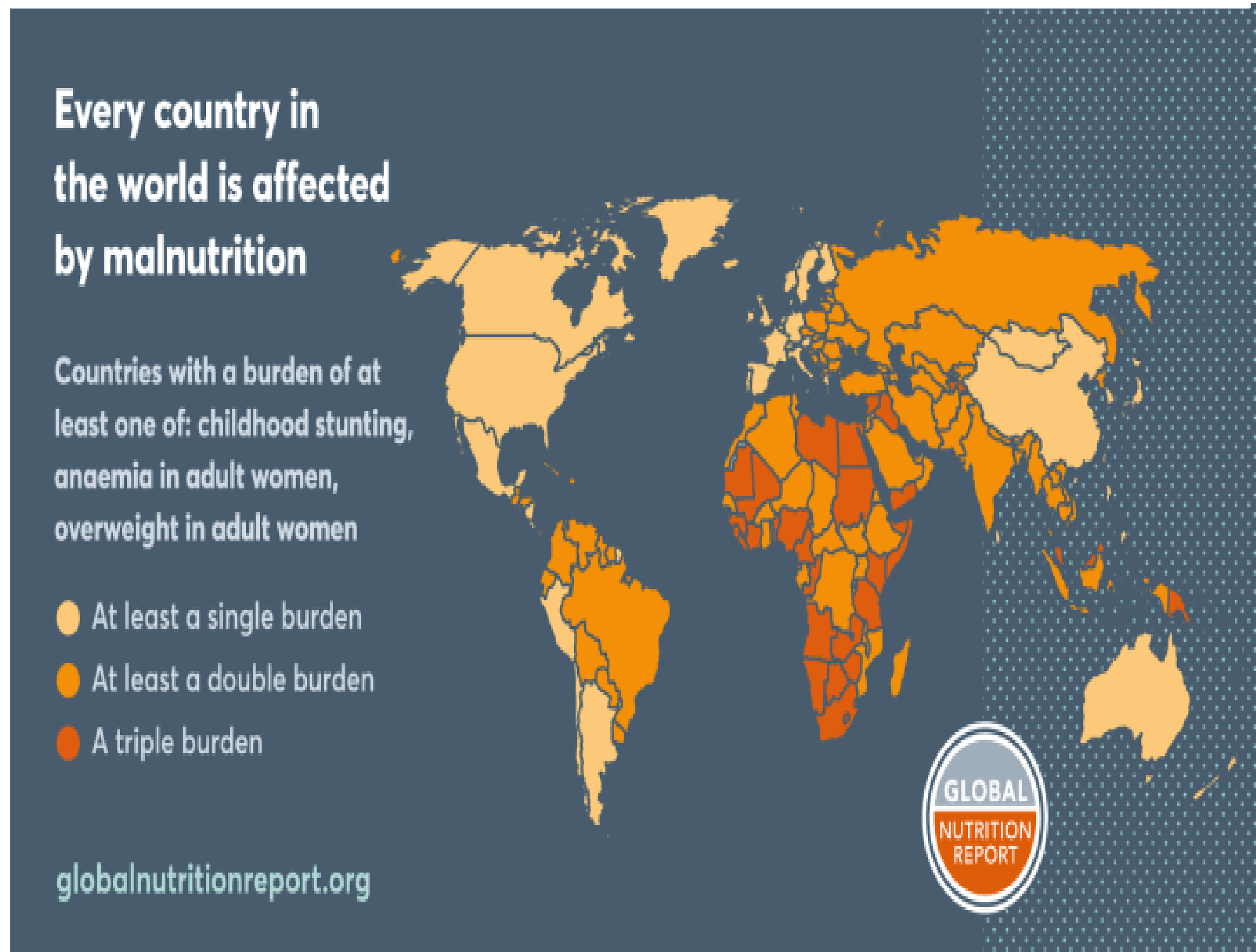


Consequences

- Health
- Economic and social

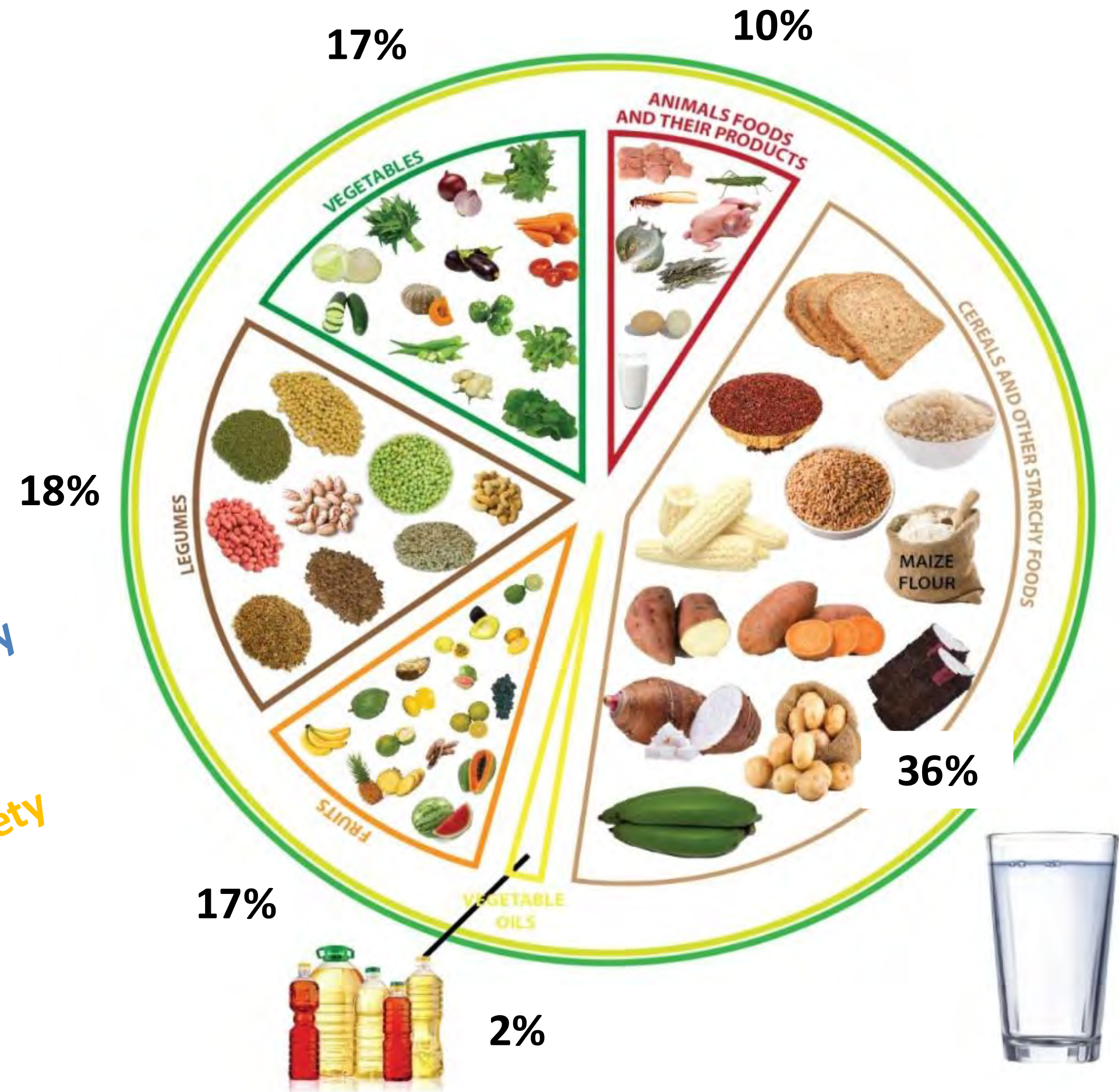


Globally: Obesity 15.8%; Anemia 29%; Stunting 22.3%; Wasting 6.8% (FAO, 2024)

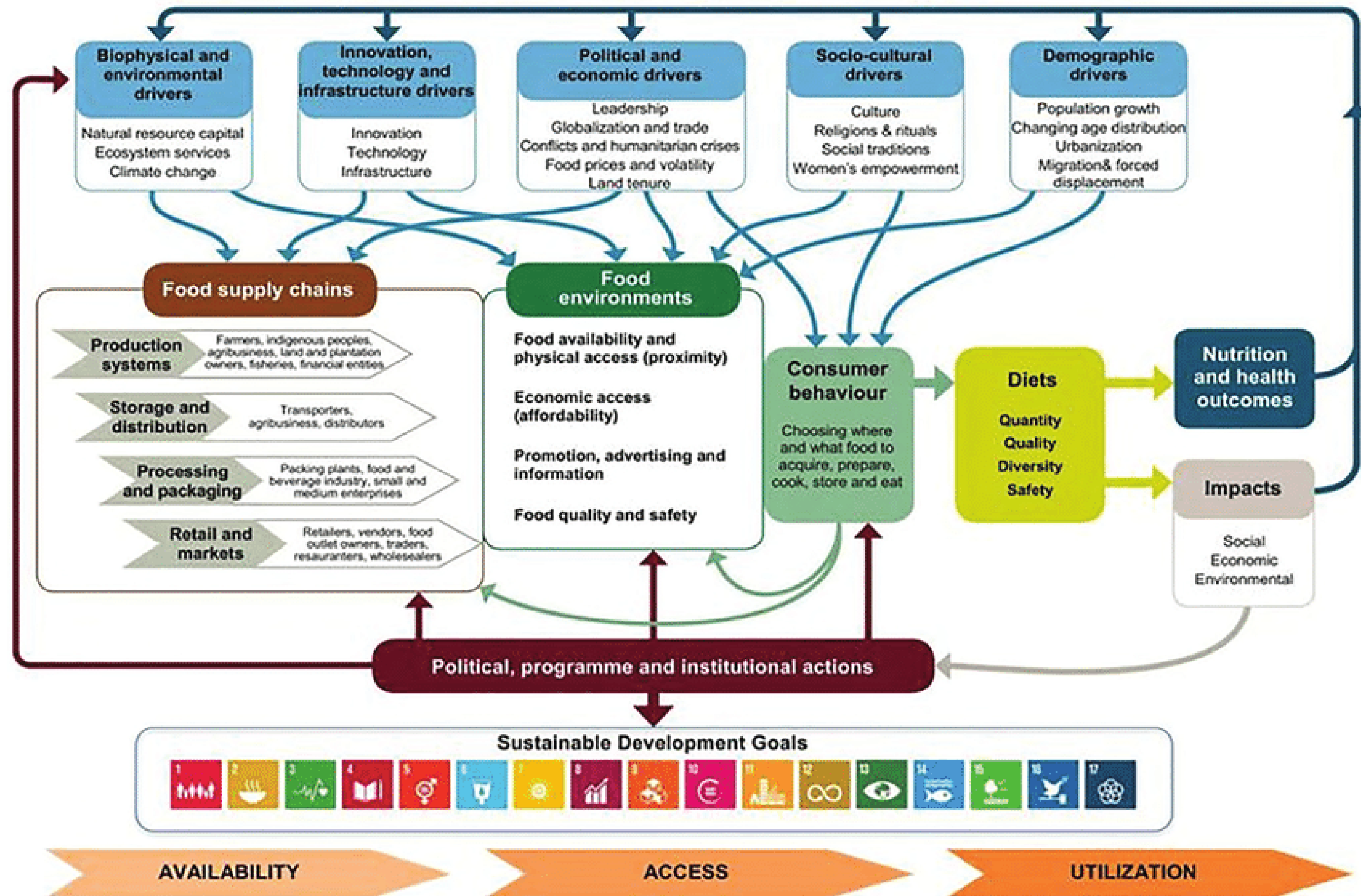


Introduction

- Fruits and vegetables are source of essential micronutrients (HLPE, 2017)
- Yet, low consumption (Msambichaka *et al.*, 2018; FAO, 2024)



Food systems interactions proposed by HLPE 2017

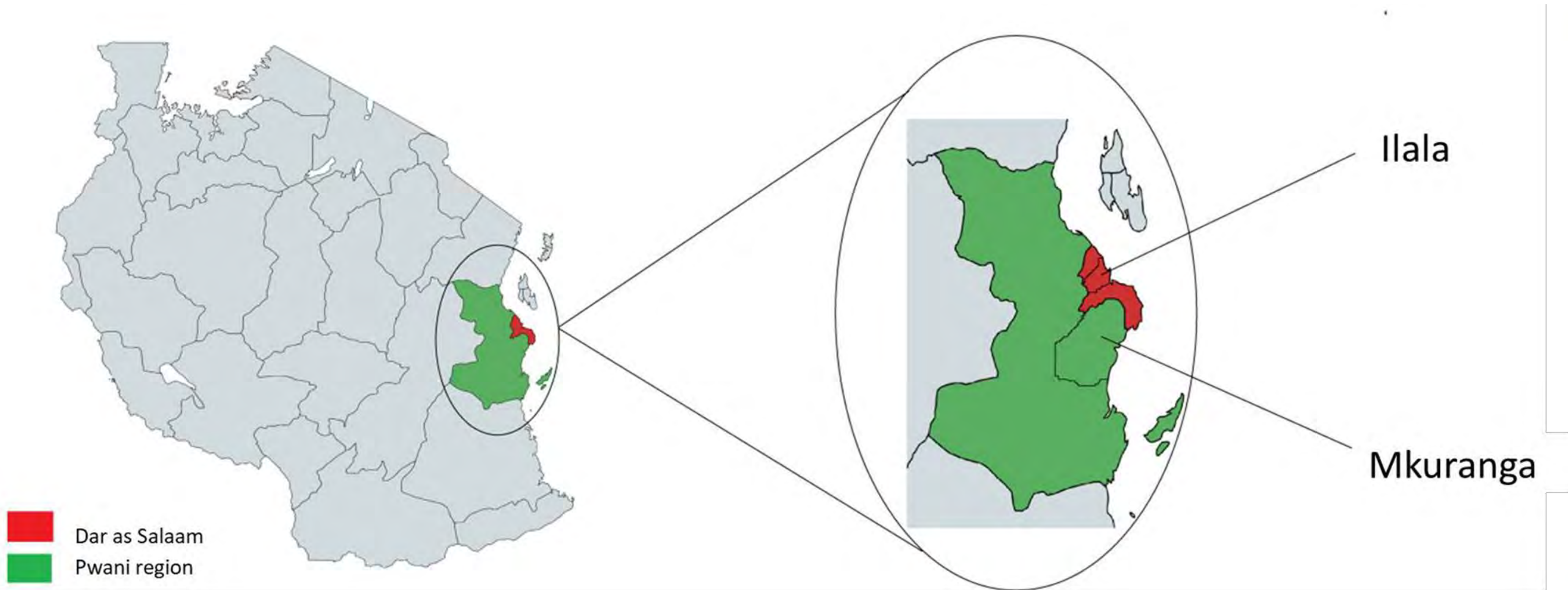


Objectives

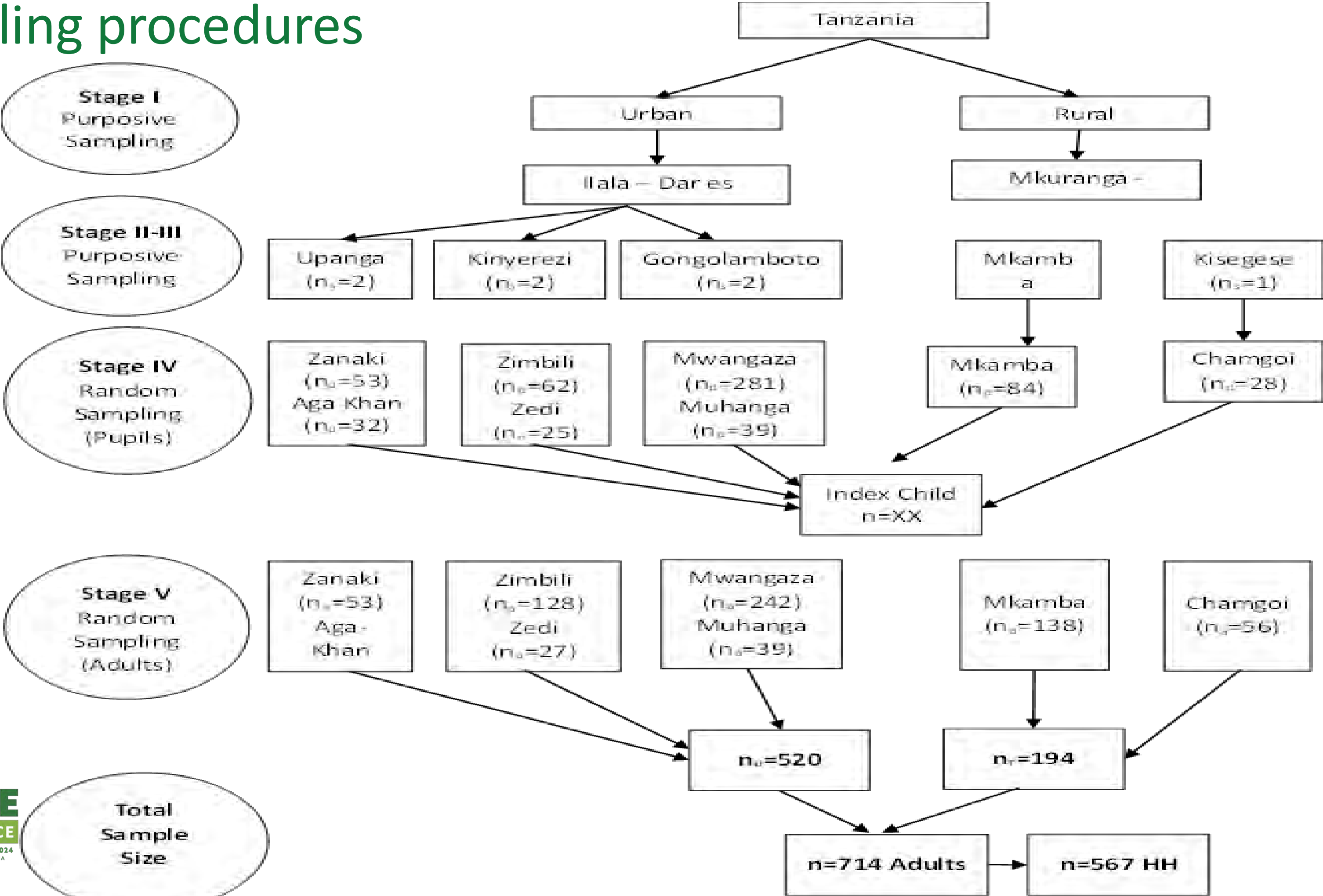


- a) To determine the household expenditure patterns on fruits and vegetables
- b) To estimate the degree of responsiveness of fruits and vegetables consumption to household income changes

Methodology – The study area



Sampling procedures



Data analysis

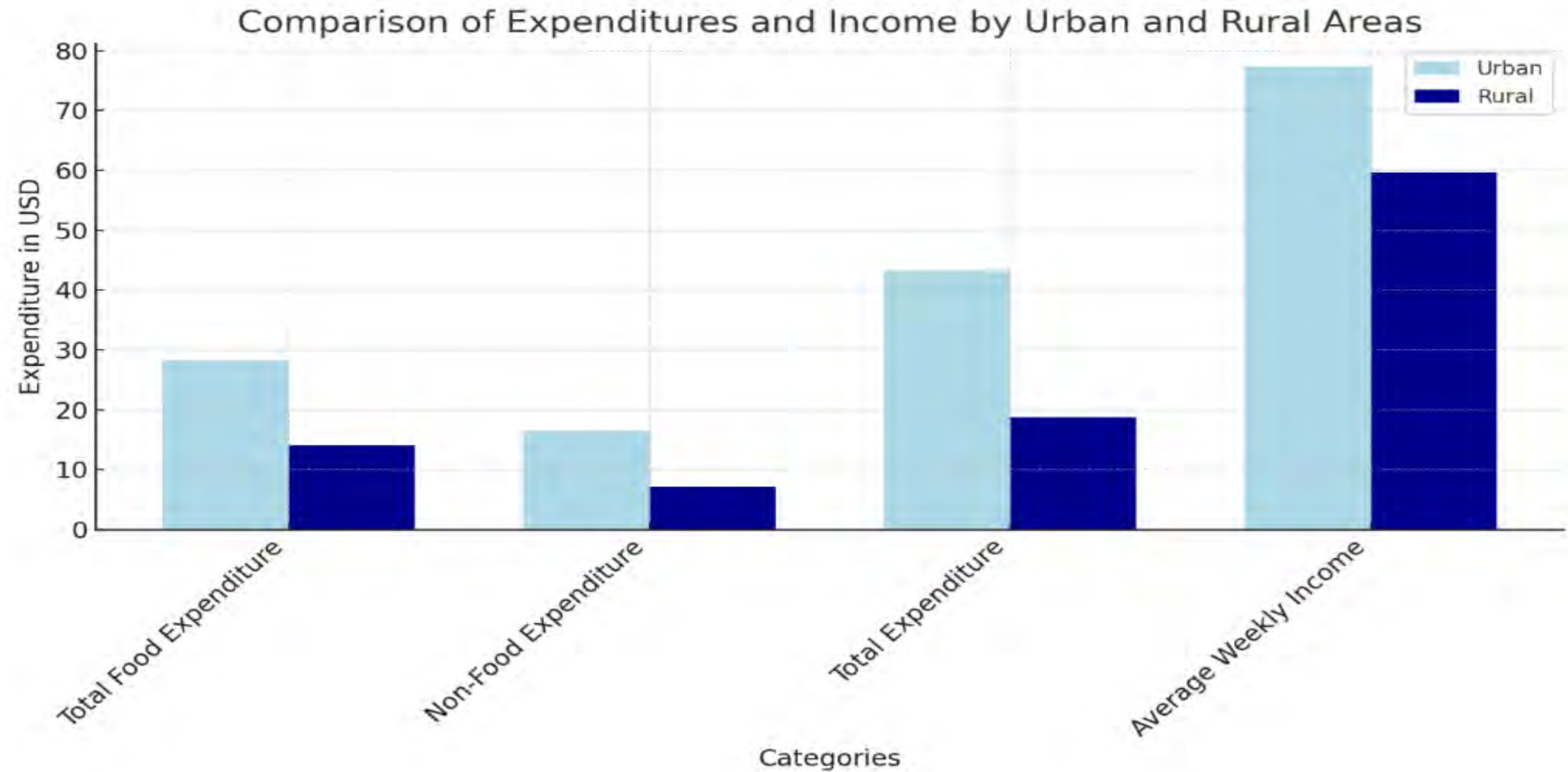
- T – test
- Quadratic almost Ideal Demand System (QUAIDS)

$$s_h^F = \alpha_0 + \beta \ln M_h + \gamma \ln p_h^F + Z_h' \psi + \varepsilon_h \dots\dots\dots 1$$

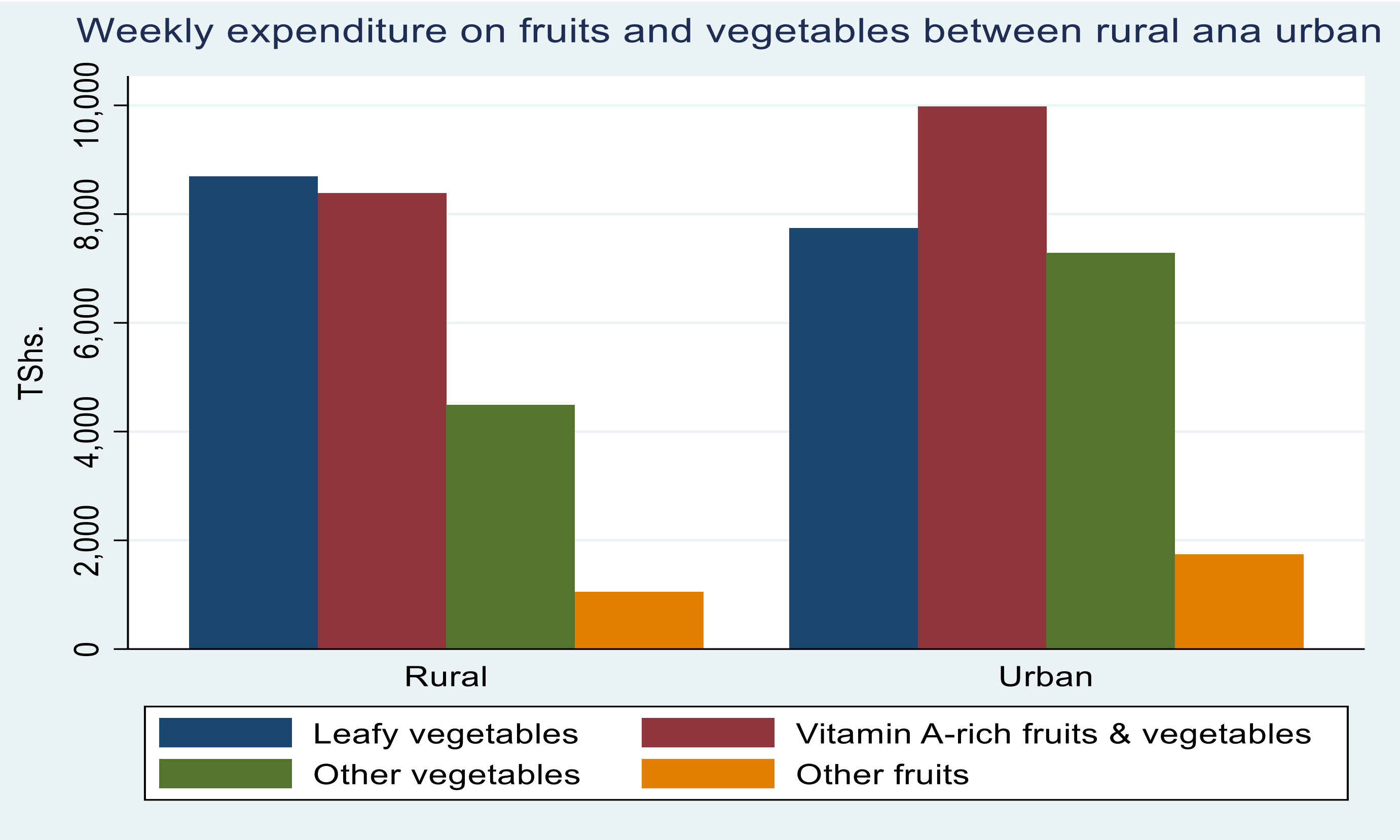
$$w_{hi}^* = \Phi(X_{hi}' \hat{\omega}_i) \left(\alpha_i + \beta_i \ln \left(\frac{m_h}{a(p_h)} \right) + \frac{\lambda_i}{b(p_h)} \left[\ln \left(\frac{m_h}{a(p_h)} \right) \right]^2 + \sum_{j=1}^n \gamma_{ij} \ln p_{hj} \right) + \varphi_i \phi(X_{hi}' \hat{\omega}_i) + \psi_i z_h + \varepsilon_{hi} \dots\dots\dots 2$$

$$\mu_{hi} = \Phi(X_{hi}' \hat{\omega}_i) \left(\beta_i + \frac{2 \lambda_i}{b(p_h)} \left[\ln \left(\frac{m_h}{a(p_h)} \right) \right] \right) \dots\dots\dots 3$$

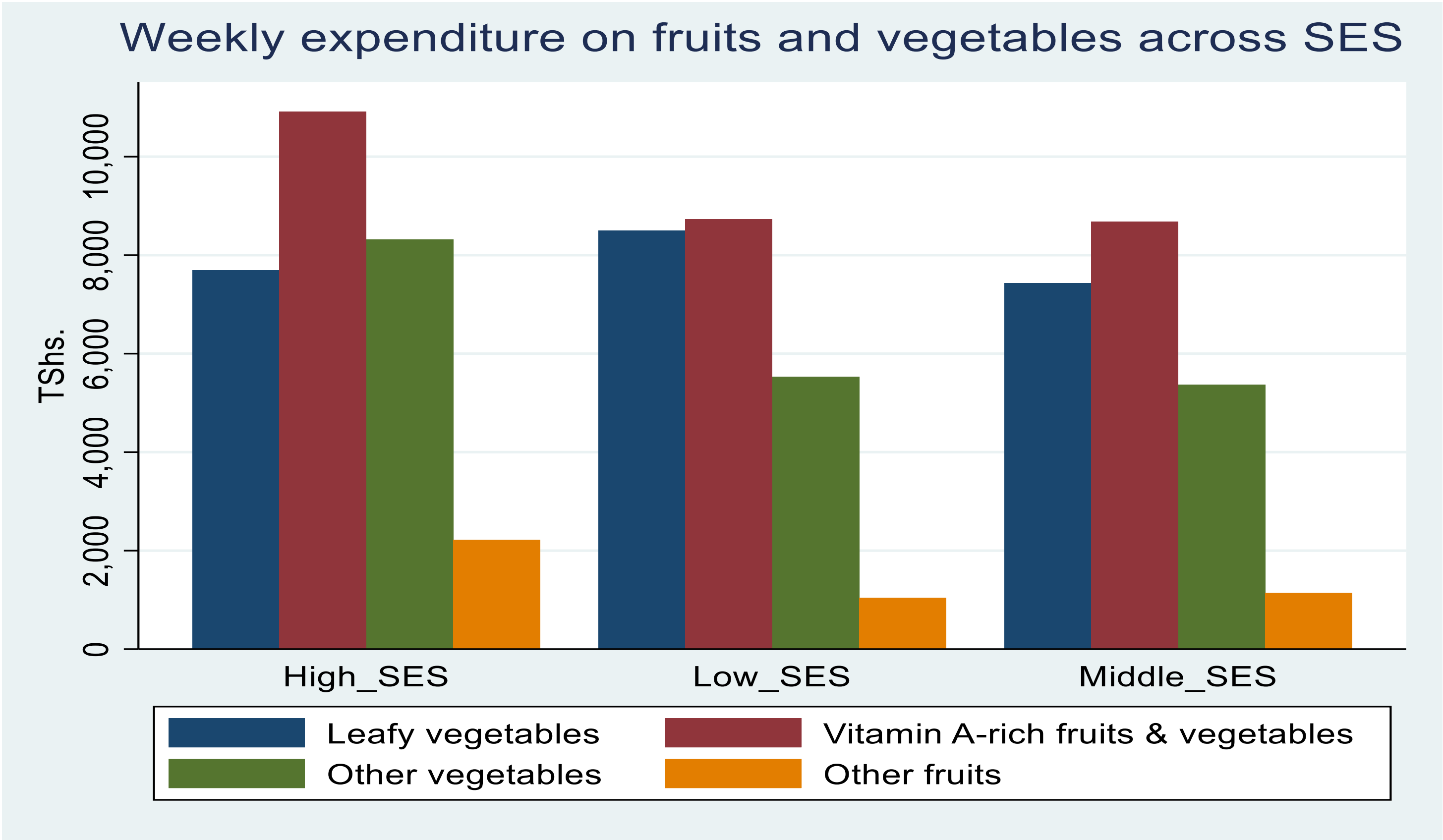
Findings



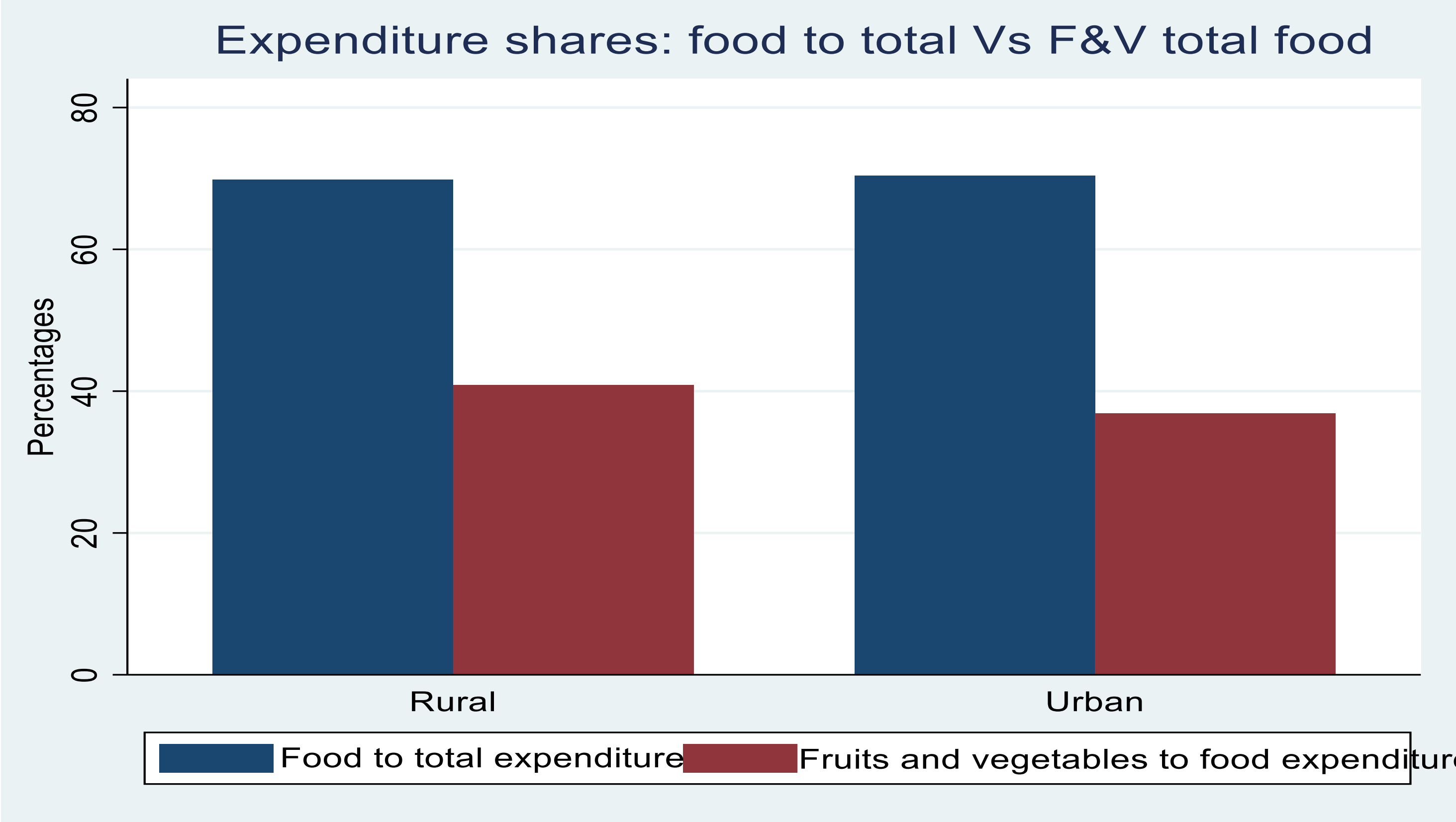
Findings



Findings



Findings



Findings

Rural Vs Urban food expenditure

| Variable | Obs | Urban | Rural | Mean difference | Std. Err. | t-statistic |
|--|-----|----------|----------|-----------------|-----------|-------------|
| Hosehold income | 547 | 167878.3 | 106284.9 | -61593.34 | 14015.82 | 4.3946*** |
| Household total expenditure | 538 | 95241.31 | 43764.93 | -51476.38 | 11366.55 | 4.5288*** |
| Household non-food expenditure | 525 | 34728.75 | 16190.91 | -18537.84 | 5847.088 | 3.1704*** |
| Household food expenditure | 547 | 70828.18 | 32602.23 | -38225.95 | 8554.908 | 4.4683*** |
| Household expenditure on fruits | 515 | 6067.987 | 4750.041 | -1317.946 | 722.1865 | 1.8249* |
| Household expenditure on vegetables | 529 | 16984.72 | 14174.07 | -2810.657 | 1035.884 | 2.7133*** |
| Household expenditure on fruits and vegetables | 547 | 25024.75 | 20103.16 | -4921.595 | 2261.514 | 2.1762** |

*Note: Mean difference = Mean (Rural) – Mean (Urban); ***, **, *, are $p < 0.01$, $p < 0.05$ and $p < 0.1$, respectively*

Findings

Income elasticity of demand for fruits and vegetables

| Variable | Vegetables | Fruits |
|---------------------------------|--------------------------|--------------------------|
| | Coefficient (Std. Error) | Coefficient (Std. Error) |
| Log of total expenditure | -0.092***(0.0224) | -0.022***(0.007) |
| Square Log of total expenditure | 0.009***(0.0029) | 0.0017*(0.0009) |
| Head gender | -0.002(0.0047) | 0.0013(0.0048) |
| Marital status | 0.001(0.0047) | 0.0036(0.0045) |
| Head education | 0.0004(0.0013) | 0.00005(0.0017) |
| Household size | 0.0009***(0.0003) | -0.0001(0.0003) |
| Location | 0.0029(0.0034) | 0.003(0.0036) |
| Constant | 0.225***(0.0401) | 0.0716***(0.0173) |
| Turning point | 4.96 | 6.51 |
| Actual turning point (TShs.) | 379,466.35 | 1,778,993.9 |
| Elasticity of food share | 0.093 | -0.011 |
| Pseudo R2 | 0.143 | 0.0361 |
| Raw sum of deviations | 21.008 | 13.911 |
| Min sum of deviations | 17.985 | 13.409 |

Note: ***, **, *, are $p < 0.01$, $p < 0.05$ and $p < 0.1$, respectively

Conclusion & Recommendations

- Urban consumers pay more for food than their rural counterparts
- Cost of healthy diet!!!
- The income elasticity of demand for fruits and vegetables is complex - Need to look into other elasticities
- Careful design of nutrition-sensitive interventions to improve the entire food environment
- Need to allocate resources towards consumer behaviour change
- Food choice, food, and healthy literacy interventions



Thank You



Email
emushi45@yahoo.com