



MODELLING FOOD WASTE: A RECURSIVE PARTITIONING APPROACH TO CONSUMER SEGMENTATION

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1. INTRODUCTION

Food Waste as a Sustainability Challenge

Food waste undermines food security, exacerbates environmental degradation, and represents a major inefficiency in the global food system. In Albania, shifts in dietary habits, increased supermarket penetration, and the industrialisation of food production have contributed to the rise in packaged and convenience foods, amplifying food waste risks.

Study Aim

This study aims to segment individuals according to their food waste behaviours by applying a decision tree (CHAID) modelling approach. It identifies waste patterns across different food categories and explores how demographic and behavioural drivers shape these patterns.

Theoretical Background

Rooted in behavioural research, this analysis incorporates self-perception and lifestyle dynamics to understand why individuals waste food. Principal Component Analysis (PCA) is used to reduce the complexity of food waste motivations into key behavioural dimensions—such as impulsive buying and poor planning—while recursive partitioning reveals how these dimensions interact with socio-demographic factors.



2. METHODS

Data: Waste Watcher International Observatory on Food and Sustainability (WWIOFS) – Albania sample

PCA: conducted on 41 self-reported waste items

CHAID Decision Tree models built on three PCA-derived patterns

Sample: 420 individuals

3. FOOD WASTE PATTERNS

- Pattern 1:** General waste (broad category)
- Pattern 2:** Plant-based and dairy products
- Pattern 3:** Ready meals and convenience foods

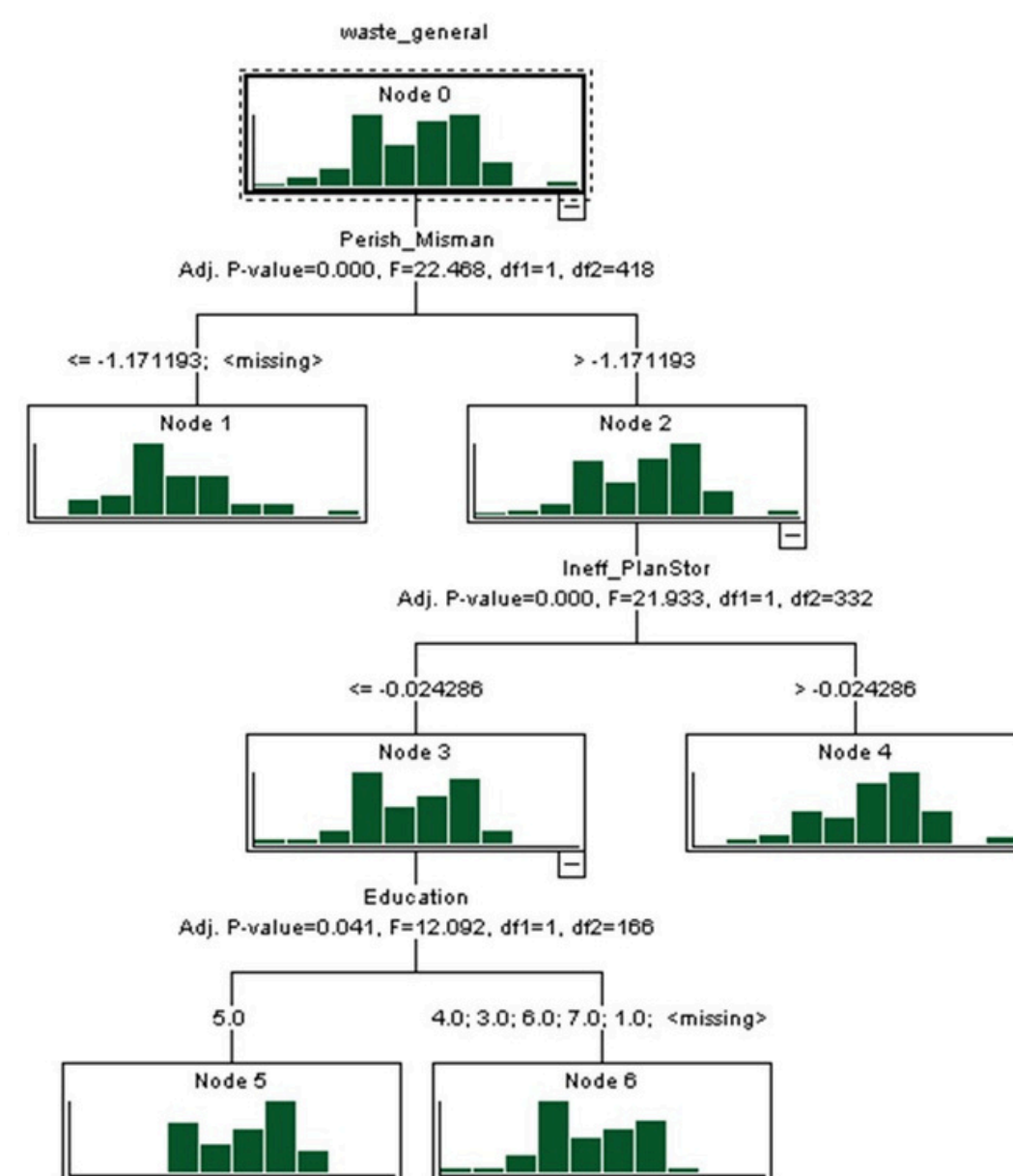
4. DECISION TREE RESULTS



Tree 1: Predictors of general waste (inefficiency, perishability, education)



Tree 2: Predictors of ready meal waste (inefficiency, age, education)



5. PCA HIGHLIGHTS

- Inefficient Planning & Storage
- Impulsive Overconsumption
- Perishability Mismanagement

6. CONCLUSIONS

- ❖ Waste behavior varies by food type and demographics
- ❖ CHAID is useful for profiling waste patterns
- ❖ Strength: behavior-based classification
- ❖ Limitation: lacks income data

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