

Report

Assessment of Households' Willingness to Increase Consumption of Wholesome Foods in Nairobi, Kenya

Hassan Mohammed Kabir* , Jimmy Isaiah Maxwell, Omonona Bolarin Titus

Department of Agricultural Economics, University of Ibadan, Ibadan, Nigeria

Abstract

The proliferation and pervasiveness of Non-Communicable Diseases (NCDs) are becoming growing concerns around the world. A multitude of people die due to these diseases, and the number keeps soaring by the day. Research has shown that a cause of these diseases includes the human lifestyle, especially eating patterns. Unfortunately, society, though, extensively consumes Wholesome Food Plant-Based Diets, WFPBDs, is unaware of their benefits in preventing or healing NCDs. This research intends to determine households' willingness to increase consumption of these novel foods and decrease their counterparts. The study was conducted in Nairobi, the capital city of Kenya, with 262 sampled households. It employed a double-hurdle model approach to examine the factors affecting awareness of WFPBDs, the extent of consumption of WFPBDs, and willingness to increase consumption of WFPBDs and decrease consumption of UWFs. The study further investigates factors that determine the proportion by which consumers are willing to increase WFPBDs and decrease UWFs. In this study, it was found that people are ready to consume extra WFPBDs and fewer UWFs after being informed of their benefits and damages, respectively. Their decision, however, hinged on several factors, including household size and income, education, religion, and employment status. Specifically, the analyses of the results show the statistics for the leading categories of people willing to increase WFPBDs as 99.19% (females), 100% (married-polygamous), 100% (traditional religion adherents), 100% (postgraduate certificate holders), and 100% (partially-employed persons). It also reveals that 100% (farmers), 100% (large family size), 100% (middle-aged family head), 100% (postgraduate certificate-holding spouses), and 100% (high-income-earning households) are willing to increase WFPBDs, and they represent the leading categories ready for change. The outcome of the report provides the ground for the study to recommend that society support food consumers and producers to improve their monthly income and thereby increase the accessibility and affordability of WFPBDs. It also recommends that society reposes consumers' confidence by ensuring food safety and maintaining the integrity of WFPBDs in the market. Finally, the study suggests the roles of Civil Society Organizations in raising public awareness on the health benefits of WFPBDs and the dangers of UWFs, especially among employed members of society, to change the narrative around healthy consumption for NCD prevention and hence global mortality suppression.

Keywords

Non-communicable Diseases, Wholesome Food Plant-based Diets, Unwholesome Foods, Willingness to Increase Wholesome Food Plant-based Diets, Willingness to Decrease Unwholesome Foods

*Correspondence: Hassan Mohammed Kabir (adekunle79@yahoo.com)

Received: 25 November 2025; **Accepted:** 30 December 2025; **Published:** 20 April 2026



1. Introduction

In modern times, the food humans consume has evolved with technological advances, and natural foods have undergone various manipulations for reasons best known to man. While some still enjoy their intimacy by retaining their nutrient contents, many foods are subject to scientific modifications during production or processing for people's consumption. Other foods are simply outcomes of laboratory creations. The former is regarded as wholesome food. And, the latter is the mirror image of the previous class, known as unwholesome food. The Wholesome foods are the food items that are fit to eat. However, unwholesome foods are those unfit for human consumption. Jessica M. [6] describes the concept of Wholesome foods as an "idea that involves the consumption of minimally processed foods that are as close to their natural state as possible". According to this description, Wholesome foods exclude highly processed, refined, and manufactured foods, which have already lost their original form and natural integrity. These excluded foods are considered unfit either by virtue of their production (inorganic), processing (highly processed), or their manufacturing (synthetic) status. We may also tag a food item as unwholesome due to spoilage conditions.

Wholesome Food Plant-Based Diets, WFPBDs, are a segment of the unfit foods which, as the name implies, is a dietary food pattern that emphasizes consumption of plant-based foods in their natural or near-natural form, including fruits, vegetables, whole grains, legumes, nuts, and seeds. In relative terms, Plant-based Wholesome Foods support healthier living and are therefore the best for humans compared to natural animal products such as meat, dairy, and eggs. This prescription is best for humans as their digestive system is designed primarily for such foods rather than animal-based or highly processed counterparts. Specifically, advocates have been promoting the adequate consumption of plant-based foods, as this is the only way forward for sustainable living. In the context of the current study, Unwholesome foods, UWFs, encompass the broad list of highly processed and refined foods, irrespective of their sources, as plant or animal, which are considered unfit for human consumption.

Unfortunately, the lack of information often causes excessive eating of unwholesome foods, UWFs, and under-consumption of WFPBDs. The high consumption of UWFs results in an endemic of terminal ailments, leading to massive deaths. The above is the current situation in every society, Kenya inclusive. Due to a lack of knowledge, the spate of food-related illnesses is alarming and warrants urgent attention.

Kenya is never an exception on the list of countries plagued with terminal food-related diseases. Non-communicable diseases, NCDs, account for 27% of the total deaths and over 50% of total hospital admissions in Kenya, Kenya Ministry of Health [8]. According to the ministry, although the prevalence is associated with three other risk factors, unhealthy diets play

a major role. Despite their harmful health tendencies, unwholesome foods are, by far, more popular amongst the vast majority in Kenya, like in many other countries today. The indiscriminate consumption of these unwholesome foods is against the backdrop of public ignorance.

Fortunately, consumption of WFPBDs is known to resolve a lot of these NCDs when consumed in the right proportion. The fact that people are unaware of the benefits they consume fewer WFPBDs. Therefore, a problem perceived in the current situation of food consumption is the unawareness of the detriment and value of what people eat. So, if households are told of the immense benefits of this eating plan, are they willing to increase the consumption of WFPBDs, and by how much? And are they willing to reduce the consumption of unwholesome food, and by how much?

This study examines people's readiness to increase the consumption of WFPBDs and decrease the consumption of UWFs. It aims to understand whether people could shift grounds in their eating habits in favor of wholesome foods. The study investigates people's readiness to change the consumption of these foods after they are informed of the potential impacts on human health. The specific objective of this study is to determine the level of awareness of whole food plant-based diets and to identify factors that influence willingness to increase consumption of WFPBDs and the factors that influence the willingness to decrease consumption of UWF.

2. Literature Review and Conceptual Framework

Most relevant to this research is the theory of consumption. Consumption theory explains the behavior of consumers in the efficient allocation of their resources. The general assumption of this theory is that individuals make choices in consumption as rational and informed persons. That is, the consumers would always want to maximize their objectives. Often, these objectives revolve around the satisfaction of utility. Although the concern of consumer theory remains the same, economists have different approaches to explaining the behavior of people in their consumption patterns.

The popular Keynesian theory of consumption is acclaimed among professionals. This theory of consumption emphasizes the current level of income as a determinant of consumption. Keynes believes the level of human consumption depends more on their current earnings than on any other factor. In this absolute theory, he propounded a psychological law that the proportion of income spent on food consumption decreases as income increases. That is, the propensity to consume is always less than 1. Even though this concept enjoys popularity in economic parlance, it is not without objection or contrary views.

The relative theory of consumption provides a counterargument to the earlier subjective position of Keynes. This theory

posits that an individual's consumption is a function of their relative rather than absolute income, as Keynes claimed. For instance, an increase in minimum wage implies an increase in absolute income. But, in relative terms, this income is the same and therefore does not necessarily imply an increase in consumption. The position of Duesenberry, the proponent of the theory, is that a general increase in income usually comes with a price increase. Given this constant income, the propensity to consume would remain the same even though there is an increase in the absolute income. This theory, however, agrees that consumption functions would instead shift as absolute income increases.

Permanent Income Theory of Consumption, on its own, relates human consumption to permanent income (long-term income). The theory propounded by Friedman explains how human consumption each day depends on their earnings. These earnings, unlike the life cycle earnings, are inclusive of the income from labor services and the proceeds from the durable assets. Friedman believes that individual consumption in a day would depend on their expectation from the combinations of their economic activities.

Golnaz R et al. [4] used a contingent valuation method to assess consumers' willingness to pay for green foods. The author expanded the theory of planned behavior in understanding consumers' willingness to pay for the consumption of green foods in Malaysia. In the research, several factors were discovered to have a significant influence on the willingness to pay for green foods in the study area. These factors include gender, geographical area, income, consumers' preferences, and motivation. Consumers' willingness was also found to be influenced by intention, perception, environmental friendliness, and food safety.

Bonaventure and Wendy [2] employed the logit model to understand the factors influencing the probability that a consumer will increase their consumption of dairy products over the past three years. The study uses the model to practically identify different factors that may explain whether consumers will increase the consumption of dairy and milk in Australia. The outcome of the above research shows that age, ethnicity, and other attitudinal variables have a significant influence on consumers' increasing consumption of dairy products. Haghjoul et al. [7] studied the factors determining the willingness to pay for the consumption of organic foods. The authors considered a logit model in the research. They believe the model is appropriate considering the ordinal nature of Willingness as a dependent variable in the study. In the above study, marital status and sex are the main factors found to determine the willingness to pay a premium for the consumption of organic foods.

In the study of factors influencing the willingness to pay for organic vegetables, Oyawole, Akerele, and Dipeolu [12] also used the logit model to isolate factors that affect consumers' willingness to pay for organic vegetable foods in a Nigerian state. Like the earlier cited literature, this work considers the

appropriateness of the logit model because of the ordinal nature of willingness as a variable.

Bonaventure and Wendy [2] found that age, ethnicity, and other attitudinal variables are significant in affecting individuals' increasing consumption of dairy products. This result points out the fact that these three identified factors could be variables to reckon with in increasing the consumption of foods.

Haghjoul et al. [5] posit that factors like individual income, family dimension, environmental concerns, wholesome diet, and consumers' awareness of these products' characteristics significantly increased consumers' willingness to pay a premium on food. This study found that the decision of an individual to increase the budget for any specific food rests on the above factors. Therefore, the decision to increase consumption of WFPBDs would depend on these factors.

Iorlamen, Abu, and Lawal [7] report that the size of the household, income of the household head, and price of food commodities were identified as major factors influencing household food demand decisions in the study area of Benue State in Nigeria.

In studying factors influencing willingness to increase consumption of vegetables, Oyawole, Akerele, and Dipeolu [12] report that over 70% of consumers were aware of organic agriculture and were willing to pay a premium for organic vegetables. The study also indicates that education and awareness of consumers regarding organic agriculture exert an influence on WTP for organic vegetables. It also concludes that the work category of individuals as civil servants affects WTP for organic vegetables.

FAO [3] further reveals the causes of increased consumption of food away from home. The organization describes "rapid urbanization and economic growth as typically associated with an increase in the consumption of food away from home in absolute terms and as a share of calories and food expenditure. Implementing traditional HCES questionnaires that are focused on household food consumption at home has the risk of underestimating food away from home by missing the increasing effect on the proportion of calories and expenditure through changes in food systems. Food Away from Home consumption is particularly important because food consumed outside the home tends to be more calorie-dense and less nutrient-dense than food consumed at home. The above assertion is the same as saying that the UWFs are detrimental to the body. The increase in the amount of food consumed away from home tends to rise with income increases".

In their study on food expenditure in selected Nigerian States, Obayelu, Okorowa, and Ajani [10] show that household food and non-food expenditure share varies across Kwara and Kogi as well as across rural and urban areas. Food expenditure share also depends on the socio-economic characteristics of the household heads. She further relates that households in both rural and urban areas of Kwara state spend more on food than their Kogi counterpart.

Also, the author believes, based on the evidence available,

that female-headed households spend more on food than male-headed households, and in line with expectations, an increase in household size in the study areas led to an increase in households' food expenditure. This implies that those with small household sizes spend less on food to ensure that their household members have adequate and nutritious food, while those with large household sizes spend more on food. Also observed in the study was the fact that household food expenditure did not increase proportionately with the per capita household income in the study area. The highest household food expenditure also goes to staple food with a wide margin compared to other food groups like the animal protein group and vegetables, all of which are required for healthy living. Mercy et al. [9] also concluded that the average household expenditure on food consumption in Nigeria is NGN16, 915.78.

Ogunmodede and Omonona [11] studied the relationship between food consumption patterns and reported illness. The study conducted research among households in Nigeria to understand the link between terminal illness and the eating behavior of people. This study took a systematic approach to gain insight into the various factors, including awareness of WFPBDs, that contribute to the rate of reported illness.

It is a well-established fact that income affects food consumption. The pattern of income effects on food consumption, however, is not definite, and there is no straitjacket rule for the income effects on food consumption. The impact of income on food consumption depends on views, as demonstrated by different economic theories of consumption. There are clear deviations from the popular Keynesian theory of consumption. Each contrary position is also grounded in real-time experience and empirical narratives of its proponents. This implies that the outcome of data on the study of income on food consumption must be critically reviewed to ensure adequate interpretations. Empirical studies on willingness to pay for the consumption of healthy foods give results that depend on the environment, culture, norms, and gender. Studies on willingness to pay for food are attributable to various factors and dimensions. Some of these factors include household size, marital status, perception, and food safety, among others.

In other words, these factors that affect willingness to pay for food consumption vary from locality to locality. While in some areas, combinations of 4-5 factors could determine individuals' willingness to consume, in other areas, more than 10 factors could be responsible for a human decision to consume. Researchers have used a wide variety of methods in analyzing willingness to consume organic or wholesome foods. Several of these studies have used Logit, Probit, Tobit, or Contingency Valuation methods in analyzing data on willingness to consume.

Throughout the literature review, this study could not extract enough data on the willingness to consume wholesome foods among residents of the area currently being studied. This is a gap that needs urgent attention to provide a framework for policy advisory in the consumption of healthy foods in the study area.

3. Research Methodology

3.1. Type of Data

Primary data were collected using a structured questionnaire. The questionnaires were administered to the pre-selected and cross-section of households for completion and immediate retrieval. Each household is represented by the head or the food provider in the family. The study obtained information on the demographic characteristics of households, food consumed, and the factors influencing the willingness to increase or decrease consumption of WFPDs and UWFs, respectively.

3.2. Sample Description

The choice of Nairobi is premised on the economy of the county as a typical urban center in Kenya, where consumption of unwholesome foods is most likely prevalent. Its choice is also based on its strategic role and its position in the economy of the East African region. The region of Nairobi plays host to individuals whose lifestyle could adequately represent the behaviours of the people of Kenya.

Nairobi is a county out of the 47 counties in Kenya. It is divided into administrative blocks at three levels: the Divisions, Constituencies, and Wards. There are 8 Divisions, under which are 17 constituencies. Under the 17 constituencies, there are 82 lower divisions called wards. In the study, the selection of participating households was informed by statistics, using a multi-stage approach of sampling.

In the first stage, the study randomly selected 7 out of the 8 Divisions of Nairobi County. The selected divisions in Nairobi include Central, Makadara, Embakasi, Kasarani, Kibera, Parklands/Westlands, and Pumwani. This figure represents approximately 88% of the total divisions. The second stage involved random selection of 8 out of the available 17 constituencies, and, in the third stage, the study also randomly selected 30 wards. In the survey exercise, a total of 262 households were obtained from the selected 30 wards for onward interview and subsequent analysis. This selection approach was necessary to enable adequate representation of the study area.

3.3. Method of Data Analysis

3.3.1. Objectives 1 and 2

This study used descriptive statistics to explain the characteristics of certain variables. These statistics include mean (average), frequency, variance, and standard deviation. Awareness of WFPBDs, extent of consumption, and willingness to increase WFPBDs and decrease UWFs among the households were analyzed and expressed in percentages.

In estimating the Extent of Consumption of WFPBDs (EWFPBDs), the study requested and listed all food items consumed

in each respondent household in the previous week of the survey. This list represents the basis of the Weekly Dietary Food Diversity of the households. The choice of a weekly recall in the food assessment tool is appropriate, supported by various empirical-based literature, including V K. M. et al. [13]. Although the 1-week recall approach proves effective, it is, however, not without a limitation relative to a 24-hour recall option. Due to the longer duration, a 1-week dietary recall is relatively subject to measurement error. But the chance of this error is minimized in the study by allowing time for the respondent to reflect on their food experience of the previous week.

Considering the features of WFPBDs, each food item was placed as either a WFPBD or a UWF for each respondent. The total number of WFPBDs was added and divided by the total number of foods consumed in the household over the week. This result was expressed in percentage for ease of analysis as follows.

$$EWF\text{PBDs} = \left(\frac{\text{Total number of WFPBDs}}{\text{Total number of Food Consumption}} \right) \times 100 \quad (1)$$

3.3.2. Objective 3

This study employs the use of a Probit model to estimate the factors influencing the awareness of WFPBDs. The Probit model is based on Capon

$$P(y=1 | x_i) = \int_{-\infty}^{\beta_0 + \beta_1 x_i} \frac{1}{\sqrt{2\pi}} e^{-\frac{t^2}{2}} dt \quad (2)$$

$$P_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_5 X_5 + e_i \quad (3)$$

Where:

- P_i = Probability of awareness of WFPBDs
- X_1 = Income of Household (Sh.);
- X_2 = Household Size (Number);
- X_3 = Religion of Household Head (Islam= 1, Otherwise=0);
- X_4 = Gender of Household Head (Male = 1, Otherwise = 0);
- X_5 = Spouse Level of Education (Years);
- e_i = Error term

Table 1. Description of Variables Affecting Awareness of WFPBDs.

Role	Proxy	Description	*A priori
Dependent	AWWFPBDS	Awareness of WFPBDs (Aware = 1, Unaware = 0)	NA
Independent	EDUS	Spouse Level of Education (Educated = 1, Uneducated =0)	Positive
	GH	Gender of Household Head (Male=1, Otherwise=0)	Positive or Negative
	HH_INC	Household Income (Continuous)	Positive
	HH_SIZE	Household Size (Continuous)	Negative
	REL	Religion of Household Head (Islam=1, Otherwise=0)	Positive or Negative

Note: * implies the expected relationship of the independent variable with the dependent variable

3.3.3. Objective 4

To assess the factors influencing the extent of consumption of WFPBDs, this study used a Tobit regression model. The model is given as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_5 X_5 + e_i \quad (4)$$

Where;

Y_i = Extent of Consumption of WFPBDs of Household:

(Total Number of WFPBDs/Total Number of Food Consumption) * 100

- X_1 = Spouse Level of Education (Years);
- X_2 = Income of Household (Sh.);
- X_3 = Household Size (Number);
- X_4 = Convenience in Food Preparation (Yes = 1, Otherwise = 0);
- X_5 = Employment Status of Household Head (Employed=1, Unemployed=0)
- e_i = Error term

Table 2. Description of Variables Affecting the Extent of Consumption of WFPBs.

Role	Proxy	Description	*A priori
Dependent	EC_WFPBDs	Extent of Consumption (Continuous)	NA
Independent	EDUS	Spouse Level of Education (Educated = 1, Uneducated =0)	Positive
	HH_INC	Income of Household (Continuous)	Positive or Negative
	HH_SIZE	Household Size (Continuous)	Negative
	CON01	Convenience of Preparation (Yes=1, No=0)	Positive
	EMP	(Employed=1, Unemployed=0)	Positive

Note: * implies the expected relationship of the independent variable with the dependent variable

3.3.4. Objective 5

This paper used a Double Hurdle model. The model allowed for the isolation of factors that influence willingness to decrease consumption of UWFs and the proportion of decreasing consumption of UWFs.

i. First Hurdle

In the first hurdle, a Probit model was used to isolate factors that influence willingness to decrease consumption of unwholesome food.

This model is given as

$$P(y=1 | x_i) = \int_{-\infty}^{\beta_0 + \beta_1 x_i} \frac{1}{2\pi} e^{-\frac{t^2}{2}} dt \quad (5)$$

$$P_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_7 X_7 e_i \quad (6)$$

Where;

P_i = Probability of willingness to decrease UWFs

X_1 = Willingness to Increase WFPBDs (Willingness=1; Unwillingness=0);

X_2 = Knowledge of Healthy Living of Household (Yes = 1, Otherwise = 0);

X_3 = Education Level of Household Head (Years);

X_4 = Household Size (Number);

X_5 = Gender of Household Head (Male = 1, Otherwise = 0);

X_6 = Marital Status of Household Head (Married = 1, Otherwise = 0);

X_7 = Spouse Level of Education (Years);

e_i = Error term

Table 3. Description of Variables Affecting Willingness to Decrease UWFs.

Role	Proxy	Description	*A priori
Dependent	W_DEC	Willingness to Decrease UWFs Consumption (Willingness=1, Unwillingness=0)	NA
Independent	W_INC	Willingness to Increase WFPBDs (Willingness=1, Unwillingness=0)	Positive
	EDUH	House Head Level of Education (Educated=1, Uneducated=0)	Positive
	GH	Gender of Household Head (Male=1, Otherwise=0)	Positive or Negative
	HH_SIZE	Household Size (Continuous)	Positive or Negative
	MAR_STA	Marital Status	Positive

Role	Proxy	Description	*A priori
		(Married=1, Otherwise=0)	
	K_HYLIV	Knowledge of Healthy Living (Yes=1, No=0)	Positive
	EDUS	Spouse Level of Education (Educated=1, Uneducated=0)	Positive

Note: * implies the expected relationship of the independent variable with the dependent variable

ii. Second Hurdle

A Tobit model was used to isolate factors that influence the proportion of decreasing UWFs, and the model is given as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e_i \quad (7)$$

Where;

Y_i = Proportion of decreasing UWFs of Household;
 X_1 = Education Level of Spouse (Years);
 X_2 = Religion (Islam = 1, Otherwise = 0);
 X_3 = Marital Status of Household Head (Married = 1, Otherwise = 0);
 X_4 = Proportion of Increasing WFPBDs (Continuous);
 e_i = Error term

Table 4. Description of Variables Affecting the Proportion of Decreasing UWFs.

Role	Proxy	Description	*A priori
Dependent	P_DEC	Proportion of Decreasing UWFs (Continuous)	NA
Independent	EDUS	Spouse Level of Education (Educated = 1, Uneducated =0)	Positive
	REL	Religion of Household Head (Islam=1, Otherwise=0)	Positive or Negative
	MAR_STA	Marital Status (Married=1, Otherwise=0)	Positive
	P_INC	Proportion of increasing WFPBDs (Continuous)	Positive

Note: * implies the expected relationship of the independent variable with the dependent variable

3.3.5. Objective 6

Again, the study used a Double Hurdle model.

i. First Hurdle

Like the analyses of the earlier objective, the study used the Probit model to isolate factors that influence willingness to increase consumption of WFPBDs.

The Probit model is based on:

$$P(y=1/x_i) = \int_{-\infty}^{\beta_0 + \beta_1 x_i} \frac{1}{2\pi} e^{-\frac{t^2}{2}} dt \quad (8)$$

$$P_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e_i \quad (9)$$

Where:

P_i = Probability of willingness to increase WFPBDs
 X_1 = Household Head Level of Education (Years);
 X_2 = Employment Status of Household Head (Married = 1, Otherwise = 0);
 X_3 = Religion of Household Head (Islam=1, Otherwise=0);
 e_i = Error term

Table 5. Description of Variables Affecting Willingness to Increase WFPBDs.

Role	Proxy	Description	*A priori
Dependent	W_INC	Willingness to Increase WFPBDs (Willingness=1, Unwillingness=0)	NA
	EDUH	Household Head Level of Education (Educated=1, Uneducated=0)	Positive
	REL	Religion of Household Head (Islam=1, Otherwise=0)	Positive or Negative
	EM_ST	Employment Status of House Head (Employed=1, Unemployed=0)	Positive or Negative

Note: * implies the expected relationship of the independent variable with the dependent variable

ii. Second Hurdle

In the second hurdle, the study used a Tobit model to isolate factors that influence the proportion of increasing WFPBDs. This Tobit model is given as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_7 X_7 + e_i \quad (10)$$

Where:

Y_i = Proportion of increasing WFPBDs of the Household

- X_1 = Willingness to Increase WFPBDs (Yes =1, No =0);
- X_2 = Education Level of Household Head (Years);
- X_3 = Gender of Household Head (Male =1, Female=0);
- X_4 = Household Size (Continuous);
- X_5 = Religion of Household Head (Islam =1, Otherwise=0);
- X_6 = Primary Occupation of Household Head (Farming =1, Non-farming =0);
- X_7 = Extent of Consumption of WFPBDs (Continuous);
- e_i = Error term

Table 6. Description of Variables Affecting the Proportion of Increasing WFPBDs.

Role	Proxy	Description	*A priori
Dependent	P_INC	Proportion of Increasing WFPBDs (Continuous)	NA
Independent	W_INC	Willingness to Increase WFPBDs (Willingness=1, Unwillingness=0)	Positive
	EDUH	House Head Level of Education (Educated=1, Uneducated=0)	Positive
	GH	Gender of Household Head (Male=1, Otherwise=0)	Positive or Negative
	HH_SIZE	Household Size (Continuous)	Negative
	REL	Religion of Household Head (Islam=1, Otherwise=0)	Positive or Negative
	PR_OCCH	Primary Occupation of Head (Farming=1, Non-farming=0)	Positive
	EC_WFPBDS	Extent of Consumption of WFPBDs (Continuous)	Negative

Note: * implies the expected relationship of the independent variable with the dependent variable

3.4. Statistical Package

Analyses in this work made use of the EViews statistical package. In this package, the study employed the Maximum Likelihood method in estimating the Logit and Tobit models.

4. Results

4.1. Socioeconomic Characteristics of the Households

4.1.1. Gender of Household Head

The study compared the main variables under investigation

by the gender of household heads in Nairobi, Kenya. The statistics obtained in the process are presented in the table below.

The analyses of the data reveal that more male-headed households (~52%) were interviewed as opposed to female-headed households (approximately 48%). About 1.49% of male-headed households were aware of the WFPBDs, while 0.81% of female-headed households were aware of the WFPBDs. The fact that male-headed households are better aware of the foods may be due to the household heads' attachment to information sources and their social lives. Males are often involved in activities, belong to groups, and pay attention to news and events around them. There was, however, a low level of awareness among the two groups. The poor awareness could be attributed to the low level of education and cultural values among the respondents.

Table 7. WFPBD and Distribution of Household Heads by Gender.

Gender of Household Head	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs %	Willingness to Increase WFPBDs	Willingness to Decrease UWFs
	No.	%				
Male	134	52.14	1.49	53.74	98.51	97.01
Female	123	47.86	0.81	56.42	99.19	95.12
	257	100.00				

Even though the male-headed households were more aware, the female-headed households consumed more of WFPBDs. While the extent of consumption of female-headed households is 56.42%, male-headed households consume 53.74% of WFPBDs. The greater average extent of consumption of WFPBDs in the female-headed household may be connected to medical prescriptions during pregnancy or other situations peculiar to females.

Approximately 99% of female-headed households are willing to increase the consumption of WFPBDs. This figure is more than the approximate 98% of male-headed households willing to increase the consumption of WFPBDs. Again, the tendency of the female-headed household to increase

WFPBDs may be due to medical prescriptions. On the contrary, approximately 97% of male-headed households were willing to decrease the consumption of UWFs. Whereas, about 95% of females were willing to decrease the consumption of UWFs. This implies that more male heads were more concerned about the damages of UWFs than the benefits of WFPBDs.

4.1.2. Marital Status of Household Head

The household heads were categorized into 6 different marital groups. This study compared the groups along the main variables of the project. The results are shown in the table below.

Table 8. WFPBDs and Distribution of Household Head of Respondents by Marital Status.

Marital Status of Household Head	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No	%				
Never Married	60	22.90	0	53.24	98.33	95.00
Married-Polygamous	10	3.82	0	48.24	100.00	100.00

Marital Status of Household Head	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No	%				
Married-Monogamous	120	45.80	2.5	53.75	99.17	95.83
Widowed	22	8.40	0	61.76	95.45	90.91
Divorced	12	4.58	0	50.52	91.67	100.00
Separated	38	14.50	0	59.79	100.00	100.00
	262	100.00				

In the table above, married monogamous households were the largest among the 6 groups, with 45.80% of the total interviewed. It is only this group that was aware of WFPBDs. The level of awareness among the group is, however, very low. Only 2.5% of the group was aware of the food. On average, consumption of WFPBDs was more pronounced among the widows, with 61.76% extent of consumption who were never aware of the WFPBDs. This may mean that households inadvertently eat WFPBDs as part of their meal.

All the groups were willing to increase and decrease the consumption of WFPBDs and UWFs, respectively. Among

the groups, all households in the categories of married polygamous and separated were (100%) willing to increase and decrease the WFPBDs and UWFs, respectively.

4.1.3. Religion of Household Head

In the survey, consideration was given to the religious attachment of the respondents. This consideration was necessary to determine if there would be any influence on the main variables of this study.

The table below gives a breakdown of the information obtained about the religion of the respondents.

Table 9. Distribution of Household Head of Respondents by Religion.

Religion of Household Head	Frequency		Awareness of WFPBDs %	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
Christianity	190	72.52	0.53	55.83	99.47	95.79
Islam	30	11.45	3.33	49.12	96.67	93.33
Traditional	5	1.91	0.00	46.00	100.00	100.00
Other	37	14.12	2.70	55.44	94.59	100.00
	262	100.00				

The two main religions in the study area were Christianity and Islam. In the sample, Christian-headed households dominate with about 73%, and the Muslim-headed households were about 11%. Muslim-headed households were more aware of the WFPBDs, as 33% of this group knew the foods. The extent of consumption of the foods among the adherents of this religion was, however, lower than that of the Christians. This study attributes higher consumption of WFPBDs among Christians to other reasons than religious prescription.

More Christian-headed households were willing to increase WFPBDs, and they were also willing to decrease the consumption of UWFs more than their counterparts.

Highest Education of Household Head

The study also investigated the highest level of educational qualification received by the respondents. Although it estimates the education of household heads in years, the study places respondents into 6 categories that represent the milestones in educational achievements.

There are categories of No Formal Education, Primary Education, Secondary Education, OND/NCE, HND/BSC, and postgraduate qualifications. The classifications were obtained such that respondents with no years, 6 years, 12 years, 14 years, 16 years, and 18 years of education were accordingly placed in the above categories.

The table below summarizes the education level of the households in the sample collected from the field.

Table 10. WFPBDs and Distribution of Household Heads by Highest Education.

Highest Education of Household Head	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
No Formal Educ.	2	0.76	0.00	55.00	50.00	50.00
Primary	39	14.89	0.00	59.67	94.87	97.44
Secondary	125	47.71	0.00	54.28	99.20	96.00
OND/NCE	38	14.50	0.00	58.29	100.00	97.37
HND/BSC	53	20.23	3.77	50.37	100.00	96.23
Postgraduate	5	1.91	20.00	51.33	100.00	100.00
	262	100.00				

In the table above, a large proportion of the households in the sample ($\approx 48\%$) were headed by secondary school qualification holders. The analysis shows that households headed by HND/BSC and Postgraduate qualification holders were the only categories aware of the WFPBDs. Primary school-headed households, however, consumed a larger proportion of WFPBDs.

Generally, households in the sample were willing to increase the consumption of WFPBDs with an increase in the education of the household head. Fifty percent (50%) of the households headed by people with no formal education were willing to increase the consumption of WFPBDs, and this proportion increases as the years of education of the household head increase. One hundred percent (100%) of households headed by postgraduate certificate holders were willing to increase the consumption of WFPBDs. The willingness to de-

crease the consumption of UWFs did not follow a definite pattern, but all education categories showed the readiness to adequately decrease the consumption of the foods. Again, 100% of the postgraduate-headed households were ready to decrease the consumption of UWFs.

4.1.4. Employment Status of Household Head

Household heads were classified as Fully Employed, Partially Employed, and Not Employed in the survey. The study then compared the categories based on their awareness of WFPBDs, the Extent of Consumption of WFPBDs, the Willingness to increase WFPBDs, and the Willingness to decrease the UWFs.

The table below is a summary of the data from the respondents.

Table 11. WFPBDs and Distribution of Household Heads by Employment Status.

Employment Status of Household Head	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
Fully employed	105	40.08	2.86	49.10	99.05	99.05
Partially employed	145	55.34	0.00	57.83	100.00	96.72
Not employed/Undisclosed	12	4.58	0.00	59.17	96.88	92.71
	262	100.00				

As observed in the table, out of the 262 households interviewed, 105 ($\approx 40\%$) were headed by a fully employed person. This group was the largest among the others, and it is the only group with respondents who were aware of WFPBDs. In this

group, 2.86% of the respondents were aware of the food category, but the group consumed the least of the WFPBDs among the others. Households headed by individuals not employed consumed the highest proportion of WFPBDs. These are

likely to be with higher incomes that are spent on fast food and meat products, given their very busy work schedules.

All three (3) categories of employment status were ready to increase WFPBDs, with 100% of the Partially Employed households willing to increase the consumption of the foods. Also, all the categories were ready to decrease the consumption of UWFs. Approximately 99% of the Fully Employed were willing to decrease the consumption of UWFs.

4.1.5. Primary Occupation of Household Head

The study considered the primary occupation of the heads of respondent households. In the table, there is a highlight of the comparison among all the categories of common occupation among the respondents.

Table 12. WFPBDs and Distribution of Household Heads by Primary Occupation.

Primary Occupation of Household Head	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
Farming	10	3.82	0.00	58.69	100.00	100.00
Trading	117	44.66	0.00	53.86	99.15	92.31
All Artisan	28	10.69	0.00	57.41	89.29	96.43
Public Sector	41	15.65	0.00	49.42	100.00	97.56
Private Sector	54	20.61	1.85	59.10	100.00	100.00
None/Undisclosed	12	4.58	0.00	54.18	100.00	100.00
	262	100.00				

Most of the respondents were in the commercial sector. According to the table, 117 (44.66%) households were headed by individuals in the trading sectors. Among all the categories, households headed by individuals in the private sector were aware of WFPBDs. This category consumed 59% of WFPBDs, and the highest proportion of WFPBDs among the others.

All categories of primary occupation of household heads were willing to increase and decrease the consumption of WFPBDs and UWFs, respectively. 100% of households led by people in the private sector are ready to increase WFPBDs and decrease UWFs.

4.1.6. Household Size

Another important socio-economic characteristic of food consumers is household size. The study groups the size of households into 3: the sizes between 1-3, 4-6, and 7-9. It then makes a comparison among the 3 groups concerning the awareness of WFPBDs, the Extent of Consumption, Willingness to increase WFPBDs, and Willingness to decrease UWFs.

Below is the summary of the findings from the field survey.

Table 13. WFPBDs and Distribution of Households by Size.

Household Size	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
1-3	140	53.44	0.71	54.41	97.86	95.71
4-6	116	44.27	1.72	55.59	98.28	97.41
7-9	6	2.29	0.00	49.44	100.00	83.33
	262	100.00				

About 53.44% of respondents have household sizes between 1 and 3. This was the largest group of respondents concerning household size. However, households with sizes between 4 and 6 were most aware of WFPBDs. The same group consumed the highest proportion of WFPBDs, with an average extent of consumption of approximately 56%.

All three (3) categories of household size were ready to increase the WFPBDs. 100% of the households with a size between 7 and 9 were willing to increase the consumption of WFPBDs. The pattern changed for willingness to decrease UWFs, as $\approx 97\%$ of households with sizes of 4 to 6 were most

ready to decrease the consumption of UWFs.

4.1.7. Age of Household Head

The age of respondents was obtained and compared against the variables of interest in this study. In the following table, the study presents the data to enable comparison of the age groups. Also, the study estimated the mean and the standard deviation of the data. This attempt is necessary to give a clue to the behavior of respondents concerning this quantitative variable.

Table 14. WFPBDs and Distribution of Households by Age of Head.

Age of Household Head (years)	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
20 -30	65	24.81	0.00	54.06	96.92	96.92
31-40	145	55.34	2.07	54.80	100.00	96.55
41-50	39	14.89	0.00	55.86	94.87	94.87
51-60	13	4.96	0.00	55.71	100.00	92.31
	262	100.00				
	Mean	35.23				
	Standard Deviation	6.88				

Most of the respondents, 145 persons (55.34%), were in the category of age 31-40 years. This was the only group in which house heads were aware of WFPBDs. In this group, 2.07% of respondents were aware of the food category. Households headed by individuals aged 41-50 years consumed WFPBDs the most, with an average of 55.86%.

All household heads between 31 and 40 and 51-60 were ready to increase the consumption of WFPBDs. Whereas respondents in the category in the age range 20-30 were most willing to decrease UWFs, house heads in the age range 51-60 were least ready. In the age group of 20-30, 96.92% of respondents were willing to decrease the consumption of UWFs.

4.1.8. Highest Education of Spouse

Another important factor proposed in this study is the education of the spouse. In the survey exercise, the study gathered information on the educational qualifications of spouses in each respondent's household. The study divided the household response to the education qualification of spouses into 6 categories. In the table below, the study compares the effect of the education of a spouse on each of the main variables of this project.

Table 15. WFPBDs and Distribution of Households by the Highest Level of Education of the Spouse of the Head.

Highest Education of Spouse	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
No Formal Educ.	11	8.73	0.00	57.65	90.91	90.91
Primary	19	15.08	0.00	48.32	100.00	100.00
Secondary	33	26.19	0.00	54.85	100.00	96.97

Highest Education of Spouse	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
OND/NCE	28	22.22	0.00	56.53	100.00	96.43
HND/BSC	32	25.40	9.38	54.61	100.00	93.75
Postgraduate	3	2.38	0.00	54.55	100.00	100.00
	126	100.00				

In the above table, the household head spouse with secondary qualifications was the majority. About 15% of the respondents have a spouse with a secondary school certificate. Although the above category featured most in the survey, the respondents with spouses holding HND/BSC were most aware of WFPBDs, with 9.38% of this group knowing WFPBDs. Households whose spouse had no formal education consumed the highest proportion of WFPBDs, 57.65% of their total food consumption.

All the household categories, except the category of households whose heads' spouses have no formal education, are ready to increase the consumption of WFPBDs. On the other hand, 100% of categories of household heads whose spouses

have primary and postgraduate qualifications were ready to decrease the UWFs.

4.1.9. Income of Household

This study grouped household income into 4 categories. These categories include the household earning a Maximum of Sh. 20,000; Sh. 21,000-40,000; 41,000-60,000; and those earning Sh. 61,000-80,000 monthly.

The categories were compared against the 4 main variables in this project. The table below summarizes the distribution of household income from the field survey results.

Table 16. WFPBDs and Distribution of Households by Monthly Income.

Income of Household ('000)	Frequency		Awareness of WFPBDs (%)	Mean Extent of Consumption of WFPBDs (%)	Willingness to Increase WFPBDs (%)	Willingness to Decrease UWFs (%)
	No.	%				
Less than 21	77	29.39	0.00	59.65	96.10	90.91
21-40	108	41.22	0.00	55.25	100.00	98.15
41-60	53	20.23	1.89	49.95	98.11	100.00
61-80	24	9.16	8.33	48.15	100.00	95.83
	262	100.00				
Mean		28,923.66				
Standard Deviation		14,699.35				

Most respondents' households (41%) earned between Sh. 21,000 and 40,000. The households that earned between Sh. 61,000 and Sh. 80,000 were most aware of WFPBDs, as 8.33% of these households know WFPBDs. The extent of Consumption of WFPBDs was most obvious among the households that were earning a maximum of Sh. 20,000 monthly.

All households earning a monthly income of 21,000-40,000 and 61,000-80,000 were ready to increase the consumption of WFPBDs. And, 100% of household earnings between Sh.

41,000 and 60,000 were ready to decrease the consumption of UWFs.

The summary of the analysis above is that there are some patterns between the socioeconomic characteristics of the households and the variables under investigation in this research. That is, all socioeconomics are associated with the awareness of WFPBDs, the extent of consumption of WFPBDs, the willingness to increase WFPBDs, and the will-

ingness to decrease UWFs. The nature, extent, and significance of these effects are the concern of the following analysis.

4.2. Consumer Behavioral Characteristics of Households

4.2.1. Estimation of Factors Influencing the Awareness of Consumption of WFPBDs

As a preparation for the estimation of a Probit model, the study checks for any presence of multicollinearity on the EVIEWS statistical package. It was revealed that there was no

multicollinearity among the independent variables. The absence of multicollinearity was suggested by the irrelevance of the Variance Inflation Factor while running the estimation on the statistical package. And, the data was therefore considered fit for the proposed analysis.

The data from the field survey were run on EVIEWS with a Probit model to estimate the factors influencing the awareness of WFPBDs. This study suppresses the constant term in the analysis. The procedure was necessary as the inclusion of the term in the estimation could not deliver a significant variable among all the variables. In the table below, the highlights of the results obtained from the analysis are presented.

Table 17. Probit Results on Factors Influencing Awareness of WFPBDs.

Dependent Variable: AWWFPBDS				
Method: ML - Binary Probit (Newton-Raphson / Marquardt steps) Date: 12/06/25 Time: 02: 06				
Sample: 1 262				
Included observations: 262				
Convergence achieved after 11 iterations				
Coefficient covariance computed using observed Hessian				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
EDU_SPOUSE	0.134847	0.058561	2.302667	0.0213**
GENDER	-1.206399	0.602812	-2.001285	0.0454**
HH_INC_	3.38E-05	1.56E-05	2.173018	0.0298**
HH_SIZE	-1.139496	0.350264	-3.253252	0.0011***
RELIGION	-1.986756	0.609415	-3.260102	0.0011***
Mean dependent var	0.01145	S.D. dependent var		0.106596
S.E. of regression	0.118107	Akaike info criterion		0.133728
Sum squared resid	3.584986	Schwarz criterion		0.201826
Log likelihood	-12.51834	Hannan-Quinn criteria.		0.161098
Deviance	25.03668	Restr. deviance		32.78391
Avg. log likelihood	-0.04778			
Obs with Dep=0	259	Total obs		262
Obs with Dep=1	3			

*** = Significance at 1% ** = Significance at 5%; * = Significance at 10%

In Table 17, 5 independent variables have been considered. Among the independent variables, all conform to the a priori sign. These variables include the Spouse's Education, the Household Head's Gender, Monthly Household Income, Household Size, and the Household Head's Religion.

The Spouse's Education, with a $p=0.0213$ ($p<0.5$), is significant at 5% and 10%. The Household's Gender recording $p=0.0454$ ($p<0.5$) is significant at 5% and 10%. Also, Monthly Household Income with a $p=0.0298$ ($p<0.5$) is significant at

5% and 10%. On the other hand, Household Size with $p=0.0011$ and Religion of the Household Head with $p=0.0011$ have $p<0.1$ and therefore are considered significant at 1%, 5%, and 10%, respectively. The low value of the Sum of Squared Residual shows that the variables considered in the model are close to reality as factors affecting the awareness of WFPBDs among consumers in Kenya.

This study rejects the Null Hypothesis (H_0) that each variable is not significant in influencing the awareness of

WFPBDs. However, it accepts the Alternative Hypotheses that the variable significantly influences the awareness of WFPBDs.

4.2.2. Estimation of Factors Determining the Extent of Consumption of WFPBD

In the table below, the highlights of the results obtained from the analysis are presented.

Table 18. Tobit Results of Factors Influencing the Extent of Consumption of WFPBDs.

Dependent Variable: EC_WFPBDS				
Method: ML - Censored Normal (TOBIT) (Newton-Raphson / Marquardt steps)				
Date: 12/08/25 Time: 01: 23 Sample: 1 262				
Included observations: 262 Left censoring (value) at zero				
Convergence achieved after 4 iterations.				
Coefficient covariance computed using observed Hessian				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	61.35351	2.299872	26.67692	0.0000
CONV_PREP	-3.588893	1.54085	-2.329164	0.0199**
EDU_SPOUSE	-0.246981	0.11187	-2.207757	0.0273**
EMPL__STATUS	-5.92423	1.619336	-3.658431	0.0003***
HH_INC_	-0.000169	5.42E-05	-3.111017	0.0019***
HH_SIZE	1.737575	0.51969	3.343481	0.0008***
Error Distribution				
SCALE: C (7)	11.5724	0.5055	22.8911	0.0000
Mean dependent var	54.82198	S.D. dependent var	1	2.66393
S.E. of regression	11.73014	Akaike info criterion	7	0.788556
Sum squared resid	35087.06	Schwarz criterion	7	0.883894
Log likelihood	-1013.301	Hannan-Quinn criteria.	7	0.826874
Avg. log likelihood	-3.86756			
Left censored obs	0	Right censored obs		0
Uncensored obs	262	Total obs		262

*** = Significance at 1%; ** = Significance at 5%; * = Significance at 10%

In the results from the table above, 5 variables were considered in the estimation of the extent of consumption of WFPBDs. The results show that one variable has the expected sign and therefore conforms to the a priori condition. This variable includes the employment status. The employment status has $p=0.0003$.

This p-value is less than 0.1, which confirms the significance of the variable as a factor influencing the extent of consumption of WFPBDs in Nairobi. The employment status of the household head is significant at 1%, 5%, and 10%. There is, however large value of Sum Squared Residual (35087.06) showing that some other influencing variables are excluded in the model.

This study rejects the Null Hypothesis (H0) and accepts the Alternative Hypothesis (H1) that the variable is significant in influencing the Extent of Consumption of WFPBDs. On the other hand, it fails to reject the Null Hypothesis (H0) that the variable significantly influences the Extent of Consumption of WFPBDs.

4.2.3. Estimation of Factors Influencing Willingness to Decrease Consumption of UWFs

In the table below is the description of various variables considered in the estimation of these factors.

Table 19. Probit Results of Factors Influencing the Willingness to Decrease UWFs.

Dependent Variable: W_DEC_ Method: ML - Binary Probit (Newton-Raphson / Marquardt steps) Date: 12/08/25 Time: 02: 23 Sample: 1 262 Included observations: 262 Convergence achieved after 6 iterations Coefficient covariance computed using observed Hessian.				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-3.161276	1.37986	-2.291013	0.022**
EDU_LEVEL	0.134953	0.068829	1.960691	0.0499**
EDU_SPOUSE	-0.138187	0.046836	-2.950455	0.0032***
GENDER	0.710556	0.358908	1.979771	0.0477**
K_HYLIV_	0.668151	0.41096	1.625829	0.104*
MARITAL_STATUS	1.281211	0.625169	2.049384	0.0404**
P_INC	0.023318	0.011387	2.047836	0.0406**
W_INC_	2.077778	1.007196	2.062934	0.0391**
McFadden R-squared	0.340648	Mean dependent var		0.961832
S.D. dependent var	0.191968	S.E. of regression		0.165257
Akaike info criterion	0.274801	Sum squared resid		6.93675
Schwarz criterion	0.383758	Log likelihood		-27.99891
Hannan-Quinn criteria.	0.318593	Deviance		55.99782
Restr. deviance	84.92856	Restr. log likelihood		-42.46428
LR statistic	28.93074	Avg. log likelihood		-0.106866
Prob (LR statistic)	0.000149			
Obs with Dep=0	10	Total obs		262
Obs with Dep=1	252			

*** = Significance at 1% ** = Significance at 5%; * = Significance at 10%

In Table 19 above, 7 different independent variables are considered. Among the seven (7) variables, six (6) variables, including Education Level of Household Head, Gender of Household Head, Knowledge of Healthy Living, Marital Status of Household Head, Proportion of Increasing WFPBDs, and Willingness to Increase WFPBDs, conform to a priori. Education level has $p=0.0499$, gender has $p=0.0477$, knowledge of healthy living has $p=0.104$, marital status has $p=0.0404$, proportion of increasing WFPBDs has $p=0.0406$, and willingness to increase WFPBDs has $p=0.0391$. All these variables have $p<0$ and are considered significant, and also have their signs conforming to the a priori. While the Education Level of Household Head, Gender of Household Head, Marital Status of Household Head, Proportion of Increasing WFPBDs, and the Willingness to Increase WFPBDs are all significant at 5%, Knowledge of Healthy Living is significant at 10%. The Sum Squared Residual of 6.93675 indicates low error estimates in the model and therefore represents a good

fit of the model. The study rejects the null hypothesis (H0) for the marital status of the household head and the willingness to increase the consumption of WFPBDs. It also accepts the alternative hypothesis (H1) for the same variables.

The above assessment confirms all the above variables as important factors that influence the Willingness to decrease the Consumption of UWFs in Nairobi, Kenya. For instance, it is concluded that a married individual from a household that is willing to increase WFPBDs is more likely to decrease the consumption of UWFs. In other words, the willingness of households to increase WFPBDs is more likely to cause a decrease in the UWFs consumption.

4.2.4. Estimation of Factors Influencing the Proportion of Decreasing UWFs

In this section, this study investigates the various factors

that determine the fraction of individuals who propose to decrease UWFs. Its objective is to identify different restrictions, impediments, or factors promoting the decision on the proportion of decreasing UWFs in the study area. This is a necessary task to give society a clear direction in advising consumers on decreasing the intake of such food types.

The survey collected information on the proportion of the decrease in the consumption of UWFs. And, also obtained data on various factors that may affect consumers in deciding on the proportion of decreasing the consumption of food. The study, consequently, regressed the proportion of the identified factors. This regression was expedient to estimate the nature and the importance of these factors on the proportion of decreasing UWFs.

In this assessment, the study evoked the second hurdle as a follow-up to the first step. This follow-up step justified the fact that food consumers make decisions on their willingness to decrease foods and decisions on the proportion of decreasing foods separately. At this time, this study used a Tobit model to isolate the factors and the nature of their corresponding effects on the response variable. The Tobit model is appropriate to accommodate the qualitative (categorical) independent variables in the model.

appropriate to accommodate the qualitative (categorical) independent variables in the model.

A Tobit model used in this study was based on the mathematical function given as:

$$y_i^* = \beta x + e_i ; e_i \sim N(0, 1) \tag{8}$$

Where:

$$Y = \begin{cases} 1, & \text{if } y_i^* > \tau \\ 0, & \text{if } y_i^* \leq \tau \end{cases} \tag{9}$$

The y_i^* is the latent variable of y_i . In this study, this y_i^* is the predicted proportion of decreasing UWFs. The observed variable y_i represents the actual proportion of decrease in the UWFs as obtained from the field. The censor point is given as τ , which provides for the lower and the upper possibilities of values of the proportion of decreasing UWFs.

In the regression, the variables considered are listed in the table that follows. The table also shows the description, alongside the expectation from the estimation concerning each variable's relationship with the response variable.

Table 20. Tobit Results of Factors that Influence the Proportion of Decreasing UWFs.

Dependent Variable: P_DEC				
Method: ML - Censored Normal (TOBIT) (Newton-Raphson / Marquardt steps)				
Date: 12/06/25 Time: 21: 18 Sample: 1 262				
Included observations: 262 Left censoring (value) at zero				
Convergence achieved after 3 iterations.				
Coefficient covariance computed using observed Hessian.				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
MARITAL_STATUS	9.127929	4.161246	2.193557	0.0283**
RELIGION	5.372005	2.893587	1.856521	0.0634*
EDU_LEVEL	0.883751	0.232507	3.800967	0.0001***
EDU_SPOUSE	-0.590505	0.312498	-1.889631	0.0588*
P_INC	0.437689	0.057465	7.616677	0.0000***
Error Distribution				
SCALE: C (6)	21.18861	0.95228	22.25039	0.0000
Mean dependent var	38.75191	S.D. dependent var	2	2.44268
S.E. of regression	20.76605	Akaike info criterion	8	0.738773
Sum squared resid	110394.5	Schwarz criterion	8	0.820491
Log likelihood	-1138.779	Hannan-Quinn criteria	8	0.771618
Avg. log likelihood	-4.346486			
Left censored obs	10	Right censored obs		0
Uncensored obs	252	Total obs		262

*** = Significance at 10%; ** = Significance at 5%; * = Significance at 1%

In the table, 5 variables were regressed on the proportion of decreasing UWFs. Among the 5 independent variables, all variables except Education of Spouse agree in sign with the a priori condition. These variables include the Marital Status of the Household Head, Religion of the Household Head, Education of the Household Head, and Proportion of Increasing Household Head.

The marital status has $p=0.0283$, religion has $p=0.0634$, education level has $p=0.0001$, and proportion of increasing WFPBDs has $p=0.0000$. All these p-values are less than 0.1, indicating that the above variables have a significant influence on consumers' willingness to decrease consumption of UWFs in Nairobi. On the flip side, the large Sum Squared Residual (110394.5) implies that at least a variable with potential influence on the dependent is not captured in the model.

This study concludes that the Null Hypothesis (H0) is rejected, and the Alternative Hypothesis (H1) is accepted for each significant variable. That is, the study found that each of the two independent variables significantly influences the Proportion of decreasing UWFs.

4.2.5. Estimation of Factors Influencing Willingness to Increase Consumption of WFPBDs

An objective of this study is to investigate the willingness to increase WFPBDs. As part of this effort, it needs to examine the factors influencing the willingness among the consumers of WFPBDs. To achieve this objective, the study gathered information on the willingness to increase WFPBDs and various factors that may affect individuals' decisions in this respect.

A regression of the identified variables was conducted on the willingness to increase the consumption of foods. This task

entails the use of the Probit model. The model is considered suitable to enable the estimation of a binary dependent variable. This step is the first of a double hurdle model to assess the consumers' readiness to increase the consumption of WFPBDs in Nairobi. The step is necessary to allow this study to put into a list the various factors that may promote or inhibit the consumption of WFPBDs. And, consequently, develop a policy direction in advising society on increasing the consumption of WFPBDs.

The Probit model used in this study is based on the following mathematical function.

$$P(y=1|x_i) = \int_{-\infty}^{\beta_0 + \beta_1 x_i} \frac{1}{2\pi} e^{-\frac{t^2}{2}} dt \tag{10}$$

Equivalent to:

$$P(y=1|x_i) = \Phi(\beta_0 + \beta_1 + \beta_2 + \dots + \beta_n + \varepsilon) \tag{11}$$

$$Y = \begin{cases} 1, & \Phi(\beta_0 + \beta_1) < 0 \\ 0, & \text{Otherwise} \end{cases} \tag{12}$$

The Y is the observed or actual response variable. In this section, the response variable is the Willingness to Increase WFPBDs. The X, on the other hand, represents the independent variables. This study is interested in establishing the relationship between each of the independent variables and the predicted probability of the response variable, y. Such a relationship would provide an idea of the effects of each of these determinants on the observed variable, Y.

The table shows the variables considered in this estimation.

The study obtained the following results from the regression estimation on EViews.

Table 21. Probit Results of Factors that Influence the Willingness to Increase WFPBDs.

Dependent Variable: W_INC_				
Method: ML - Binary Probit (Newton-Raphson / Marquardt steps) Date: 12/06/25 Time: 21: 53				
Sample: 1 262				
Included observations: 262 Convergence achieved after 4 iterations				
Coefficient covariance computed using observed Hessian.				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
RELIGION	1.2627	0.4918	2.5676	0.0102**
EDU_LEVEL	0.0719	0.0254	2.8312	0.0046***
EMPL__STATUS	1.1891	0.5013	2.3718	0.0177**
Mean dependent var	0.9847	S.D. dependent var		0.1228
S.E. of regression	0.1116	Akaike info criterion		0.1432
Sum squared resid	3.2265	Schwarz criterion		0.1841
Log likelihood	-15.7592	Hannan-Quinn criteria		0.1596
Deviance	31.5184	Restr. deviance		41.3950

Dependent Variable: W_INC_
Method: ML - Binary Probit (Newton-Raphson / Marquardt steps) Date: 12/06/25 Time: 21: 53
Sample: 1 262
Included observations: 262 Convergence achieved after 4 iterations
Coefficient covariance computed using observed Hessian.

Avg. log likelihood	-0.0602		
Obs with Dep=0	4	Total obs	262
Obs with Dep=1	258		

*** = Significance at 10%; ** = Significance at 5%; * = Significance at 1%

In the table above, the study features three (3) independent variables. All three 3 considered variables have their signs conforming to the expectation. The religion of the household head has $p=0.0102$, the education level of the household head has $p=0.0046$, and the employment status of the household head has $p=0.0177$. All the p-values are less than 0.1 and therefore are all significant. The religion, education level, and employment status of the household head are significant at 5%, 1%, and 1%, respectively. In the estimation above, the low Sum Squared Residual of 3.2265 shows that the variables captured in the model are close to reality. The study rejects the Null Hypothesis (H0) that each variable is not significant in influencing the willingness to increase WFPBDs and accepts the Alternative Hypothesis (H1) for each variable.

4.2.6. Estimation of Factors Influencing the Proportion of Increasing WFPBDs

In the immediate sub-section, this study considers the factors influencing the willingness to increase the consumption of WFPBDs. In its bid to fully assess the readiness to increase the food, the study goes a step further to investigate the factors influencing the proportion of increasing WFPBDs in the current section. In this sub-section, this study aims to examine and identify the factors that would aid the decision on the proportion of increasing WFPBDs. This aspect of the research is important. At least, it would enable society to understand the factors to give adequate attention to the policy recommendation.

To actualize this objective, the study collected information on the proportion that each household is willing to increase the consumption of WFPBDs. Alongside this information, it also obtained data on factors determining the proportion of increasing food consumption in the field survey. These 2 sets of information were analyzed through regression of a Tobit model. This step would constitute the follow-up stage in the double hurdle model to understand the readiness to increase or pay for the consumption of WFPBDs in Nairobi. The Tobit model is suitable for analysis, given its capacity to accommodate both categorical and continuous independent variables. Given below is the basis of this model as used in this analysis:

$$y_i^* = \beta x + e_i ; e_i \sim N(0, 1) \tag{13}$$

Where:

$$Y = \begin{cases} 1, & \text{if } y_i^* > \tau \\ 0, & \text{if } y_i^* \leq \tau \end{cases} \tag{14}$$

Like in the earlier sub-sections, the y_i^* is the latent variable of variable y. In this instance, it is the latent variable for the observed Proportion of increasing WFPBDs. The x represents all the variables suspected to influence the proportion of increasing WFPBDs.

The table below presents all the variables featured in the regression.

Table 22. Tobit Results of Factors that Influence the Proportion of Increasing WFPBDs.

Dependent Variable: P_INC
Method: ML - Censored Normal (TOBIT) (Newton-Raphson / Marquardt steps)
Date: 12/06/25 Time: 22: 27 Sample: 1 262
Included observations: 262 Left censoring (value) at zero
Convergence achieved after 4 iterations.
Coefficient covariance computed using observed Hessian.

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GENDER	4.4398	1.8686	2.3760	0.0175**

Dependent Variable: P_INC**Method: ML - Censored Normal (TOBIT) (Newton-Raphson / Marquardt steps)****Date: 12/06/25 Time: 22: 27 Sample: 1 262****Included observations: 262 Left censoring (value) at zero****Convergence achieved after 4 iterations.****Coefficient covariance computed using observed Hessian.**

Variable	Coefficient	Std. Error	z-Statistic	Prob.
RELIGION	5.1949	2.8944	1.7948	0.0727***
EDU_LEVEL	-1.1422	0.4885	-2.3384	0.0194**
HH_SIZE	-1.5258	0.8653	-1.7633	0.0779***
W_INC_	74.8272	8.9954	8.3184	0.0000*
EC_WFPBDS	-0.2040	0.0967	-2.1111	0.0348**
_1ST_OCCUPATION	-11.4524	6.5496	-1.7486	0.0804*
Error Distribution				
SCALE: C (8)	20.0397	0.8811	22.7452	0.0000
Mean dependent var	47.5382	S.D. dependent var	2	1.6235
S.E. of regression	20.2355	Akaike info criterion	8	0.7687
Sum squared resid	104006.4000	Schwarz criterion	8	0.8776
Log likelihood	-1140.6980	Hannan-Quinn criteria.	8	0.8125
Avg. log likelihood	-4.3538			
Left censored obs	4	Right censored obs		0
Uncensored obs	258	Total obs		262

*** = Significance at 10%; ** = Significance at 5%; * = Significance at 1%

In the Tobit analysis, there are 7 independent variables. Among all the variables, 4 are significant and have the expected sign. These significant variables include the Gender of the Household Head, Religion of the Household Head, Household size, and the Willingness to increase WFPBDs. The gender has $p=0.0175$, religion has $p=0.0727$, household size has $p=0.0779$, and willingness to increase has $p=0.000$. All the variables have $p<0.1$ and are therefore significant in determining the proportion of increasing the consumption of WFPBDs.

While the gender is significant at 5% and 10%, religion is significant at 10%, the household size is significant at 10%, and the willingness to increase WFPBDs is significant at 1%, 5%, and 10%. This study therefore rejects the Null Hypothesis (H0) and accepts the Alternative Hypothesis (H1) that each independent variable significantly influences the proportion of increasing WFPBDs.

The large value of the Sum Squared Residual (104006.4) shows that there are other variables influencing the proportion of increasing the WFPBDs among food consumers in Nairobi. These variables are not reflected in the estimated model. Further research may give attention to unravelling these variables to extend the knowledge about healthy food consumption in

the study area.

5. Conclusion

This section presents the position of the author. The positions in this research are premised, inter alia, on the preceding findings resulting from the critical analysis and estimation of the first-hand information obtained in the survey. These findings are supported by literature evidence, personal experience, and contact with food consumers. The study, in the spirit of objectivism enshrouded in scientific research, engages in diligent and careful evaluation to establish a fair position on every theme of the research.

It makes the theme of this research a point of reference in developing positions. The reference to the subject matter of the research is to ensure that no element of concern in this work is undiscussed. Given this important task, the study discusses each conclusion in this section based on the objectives set out in the opening chapter. The following is therefore the conclusion reached in the study.

5.1. The Level of Awareness of Wholefood Plant-based Diets

The high level of awareness among male would not be unconnected with their engagement in social activities and gatherings, and attachment to information sources and channels, among other things. This conclusion is consistent with research findings in different areas and with different topics and authors. Ogunmodede and Omonona [11] conclude that male food consumers in Ogun state, Nigeria, are more aware of WFPBDs. The authors also attribute the high consumption of WFPBDs in male-headed households to the level of awareness among the heads.

The findings in the current research show that married monogamous individuals are the only group that is aware of WFPBDs in the study area. Although the expectation is that other groups have some level of awareness, the case of this study is different. The awareness of married persons of WFPBDs may be linked to the fact that household heads have the tendency to be informed through their partners.

The study also concludes that the observed trend regarding education is a possibility since access to education increases the level of information acquired. The high awareness among fully employed people may be due to their long-time commitment to work and, therefore, their contacts with large groups from different backgrounds. Private sector staff could have access to welfare services, including the opportunity to attend health seminars and workshops. Hence, the reason for their awareness of WFPBDs is more than the public sector staff. This study posits that the high level of awareness among high-income earners is perhaps linked to the opportunity to acquire information gadgets and facilities such as the internet, among others. They can also meet learners and be informed about WFPBDs.

The reasons for the knowledge of WFPBDs by household-headed middle-aged individuals could be due to vibrancy and youthfulness. People in this age group are usually active in using modern gadgets; they are educated, active, and more exposed. They belong to different social platforms, including physical and digital platforms, and global networks. Hence, the justification is that these underlying factors are likely the driver for the observed changes.

5.2. The Extent of Consumption of Whole Food Plant-based Diet

This study concludes that consumers in Nairobi, on average, consume WFPBDs. The female-headed household would be more willing to increase the consumption of WFPBDs. Education plays a major role in consumption decisions among consumers in Nairobi. Although consumption of WFPBDs does not follow a definite pattern across different qualified household heads, it is generally high in the area.

This study concludes that the lower consumption of Muslims may be due to consideration for Halal foods and subtle restrictions on certain foods in general. However, this is not a verdict on the justification of the observed trend. Literature and past studies on the consumption of foods rarely discuss the impact of religion on WFPBD consumption. As such, this study would prefer to take a moderate approach in making a judgment in this area.

The reason for the high consumption among the unemployed may be due to the low price of food. Unemployed people could also have time to fetch the best of WFPBDs more than the employed. This study concludes that non-farming household heads (private sector workers) are both more aware and consume WFPBDs better in the study area. The observed pattern of consumption concerning Monthly Household Income could be because the low-income earners are in constant search for cheap items such as WFPBDs. It could also be due to the availability of time or the inability to obtain high-priced processed foods.

This study suggests that the higher consumption of WFPBDs among the aged is likely due to consideration for health. As humans grow older, they become more conscious of their food consumption. Similarly, the extent of consumption of WFPBDs in households with spouses increases with age. Consumer behavior concerning spouse education may be linked to income earning and the purchasing power of the spouse. Spouses with no formal education earn less, are unable to afford processed foods, and, hence, often opt for cheap WFPBDs.

5.3. The Factors Influencing the Awareness of Consumption of WFPBDs

This study concludes that an important factor influencing awareness of WFPBDs in the Nairobi area is Monthly Household Income. The conclusion is against the backdrop of the results given in the analysis. A simple interpretation of the statement is that households become more aware of WFPBDs as their income increases.

5.4. The Factors That Determine the Extent of Consumption of Wholefood Plant-based Diets

This study concludes that a Christian-headed household in Nairobi consumes more of WFPBDs. An increase in household size would increase the extent of consumption of WFPBDs in the area. It is worth pointing out that an increase in WFPBDs with household size could be a result of a decrease in the purchasing power of the household. In this situation, a household with a large size would be restricted in the choice of foods, and, thereby, consider low-price foods like WFPBDs. And, this trend may increase as household size increases.

5.5. The Factors That Influence Willingness to Decrease Consumption of UWFs

In Nairobi, the willingness of consumers to increase WFPBDs would cause them to be ready to decrease UWFs. This explanation is logical and is a possibility, especially when there is a budget constraint. A consumer who has a fixed food budget would have no option but to decrease the UWFs if they wish to increase the WFPBDs.

5.6. The Factors That Influence the Proportion of Decreasing UWFs

The proportion of increasing WFPBDs and willingness to decrease UWFs are important factors influencing the proportion of decreasing UWFs in Nairobi. The explanation of the influence of these two (2) variables on the proportion of decreasing UWFs is reasonable. Perhaps, as consumers increase the proportion of consuming WFPBDs, they must complement the gesture with a decrease in the proportion of UWFs. This pattern is particularly important when consumers have a restricted food budget, such that there must be a marginal rate of substitution between the 2 opposing components. Willingness to decrease also has a logical influence on the proportion of decreasing UWFs. If consumers have the willingness to decrease the consumption of UWFs, there is the possibility of decreasing a greater proportion of these foods.

5.7. Factors That Influence Willingness to Increase Consumption of WFPBDs

Adelina and Fredy [1] posit that the education level of household heads is a significant factor influencing the consumption of pulses in Tanzania. Also, Oyawole, Akerele, and Dipeolu [12] conclude that the education of household head, household size, household income, awareness of WFPBDs, and knowledge of health benefits influence the consumption of organic vegetables (WFPBDs). In their study of determinants of willingness to purchase organic foods, Voon, Ngui, and Agrawal [14] establish a position. They found that attitude (as represented by health awareness) significantly influences willingness to pay for organic foods. The authors also confirm that, though affordability (as represented by convenience in preparing food) is not significant in their research, it may, however, generally influence the willingness to pay for the food. A critical evaluation of these positions shows that all factors identified in the corresponding section in this research are suspected to influence willingness to increase WFPBDs. However, a few of the variables pose a significant influence on the willingness to increase consumption of WFPBDs among Nairobi food consumers.

5.8. Factors that Influence the Proportion of Increasing Consumption of WFPBDs

The result of this work also shows that a male-headed household would increase the proportion of WFPBDs more than a female-headed household. This statement does not contradict the earlier position that households headed by females consume a larger proportion of WFPBDs. The proportion of increasing WFPBDs is concerning the original level of consumption. That is, if a male-headed household increases the proportion by 45%, such a household doesn't need to consume more than a female-headed household that increases its WFPBDs consumption by 30%. In other words, a 45% increase in WFPBDs consumed in male-headed households may be lower than a 30% increase in WFPBDs consumed in female-headed households. Besides, female-headed households are already consuming a greater extent of WFPBDs, and, therefore, will further increase the proportion of WFPBDs at a lower rate.

We also conclude that a Christian-headed household increases the proportion of WFPBDs than the Muslim (or other faithful)-headed households. And, a household that is willing to increase its WFPBDs will likely increase the proportion of WFPBDs. That is, the more a household is willing to increase WFPBDs, the more it increases its proportion.

Given the positions above, this study confirms that households in Nairobi are willing to increase consumption of Wholesome Food Plant-Based Diets, WFPBDs. The decision-making process of individuals to pay for these novel foods, however, hinges on several factors that would be difficult to ignore by policymakers.

6. Recommendations

Given the findings, this section intends to deliver some policy recommendations to promote healthy consumption in society. The recommendations in this section are in two (2) prongs that would focus on both consumers and producers of WFPBDs. The approach here is to provide suggestions along the 4 main thrusts of this research work: Awareness, Willingness to Decrease UWFs, Extent of Consumption, and Willingness to Increase WFPBDs. An important factor estimated to influence awareness of WFPBDs in Nairobi includes Spouse's Education, the Household Head's Gender, Monthly Household Income, Household Size, and the Household Head's Religion. Therefore, to improve people's awareness, adequate attention must be given to all these factors.

There must be active participation of civil society organisations in promoting the education of the benefits of WFPBDs and the detrimental effects of UWFs among consumers. Such campaigns could be directed at encouraging the enrollment of household spouses in schools. This approach will bring spouses closer to knowledge and awareness of WFPBDs. The campaigns should target more female spouses as gender plays a critical role in awareness of WFPBDs. Efforts must be made

to ensure public income sources receive a boost so that society's awareness of WFPBDs is strengthened. An option available to achieve the improvement of people's income is business support. Society must rally to provide adequate support to people's sources of income. This support is attainable through provisions of loans, input support subsidies, grants, and the creation of an enabling environment.

Financial support through provisions of business loans would uplift individuals' businesses and generate more income. Input support subsidy, in the same manner, would create some relief for WFPBD producers to generate more income and keep them in the business. Financial grants would also uplift businesses to raise more income for the owners. The provision of an enabling environment, such as infrastructure and market development, would go a long way in generating more income for businesses. The logic behind promoting more income generation is straightforward. It is to enable the consumers of WFPBDs to acquire the gadgets, to get prompt and timely information on these beneficial foods and the dangers of UWFs' counterparts.

Earlier, this research established that a major factor influences the extent of consumption of WFPBDs in Nairobi. The factor includes employment status. Employment Status has a negative relation with the extent of consumption. There is a high chance that a fully employed persons usually eat processed and ready-made foods and does not consider WFPBDs. There is a need for an awareness campaign of the WFPBDs and conscious efforts at making food available as needed. To promote a greater extent of consumption as employment status improves, employers of labor should improve their welfare services. In this way, employees would have access to foods of their choice, including WFPBDs at workplaces.

The education of household heads is estimated as an important factor that influences the Willingness to decrease UWFs. To ensure people's willingness to decrease UWFs, there is a need to improve the education of household heads. Society must create training programs on WFPBDs consumption on Television, radio, or the internet. There could be advertisements placed in strategic public flashpoints to promote and educate people on WFPBDs.

Another important factor that influences the Willingness to Decrease UWFs is the Willingness to Increase WFPBDs. To ensure willingness to increase WFPBDs among the public, it is advised that society also strives to develop market systems. A suggested way to achieve this development is through the promotion of decent packaging of WFPBDs and the establishment of a regulatory body for the sub-industry. The government also needs to ensure an effective pricing system that will reduce market margins in the trading of WFPBDs. Product subsidy is yet another effective method to promote the consumption of WFPBDs.

This study advises that the government should regulate food prices. Price regulation will cushion the effect of increasing household size on purchasing power. That is, the purchasing power of households would remain stable with price regulation. And, thereby, enabling households to meet their WFPBD

demands. All these measures are to enable consumers to increase their extent of consumption of WFPBDs, even as household sizes increase. All of these strategies may increase the confidence of consumers of WFPBDs and, thereby, be willing to decrease consumption of UWFs.

Abbreviations

NCDs	Non-Communicable Diseases
UWFs	Unwholesome Foods
WFPBDs	Wholesome Food Plant-Based Diets

Author Contribution

Hassan Mohammed Kabir: Conceptualization, Formal Analysis, Investigation, Methodology, Project Administration, Resources, Software Procurement, Validation, Writing – original draft, Writing – review & editing

Jimmy Isiah Maxwell: Data Curation

Omonona Bolarin Titus: Supervision

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] ADELINA E. M. & FREDY T. M. K. (2014), Factors Influencing the Consumption of Pulses in Rural and Urban Areas of Tanzania, *Tanzania Journal of Agricultural Sciences* (2014) Vol. 13 No. 2, 59-74, <https://www.suaire.sua.ac.tz/items/b7c28655-96c4-424c-acf6-76593e355503>
- [2] BONAVENTURE B. & WENDY J. U. (2012), Factors Influencing Consumers' Consumption of Dairy Products, *Australian Agriculture and Resource Economics Society*.
- [3] FAO AND WORLD BANK (2014), *Food Data Collection in Household Consumption and Expenditure Surveys: Guidelines for low- and middle-income countries*.
- [4] GOLNAZ R et al. (2013), Consumers' Willingness to Pay for Green Foods in Malaysia, *Journal of International Food & Agribusiness Marketing*, 25: 1–18.
- [5] HAGHJOU M. et al. (2013), Factors Affecting Consumers' Potential Willingness to Pay for Organic Food Products in Iran: Case Study of Tabriz, *J. Agr. Sci. Tech.* Vol. 15: 191-202.
- [6] JESSICA M. (2024), *Whole-Foods Diet 101: A Complete Beginner's Guide*, <https://www.everydayhealth.com/diet-nutrition/whole-foods-diet/> Updated on February 7, 2024.
- [7] IORLAMEN et al. (2014), Assessment of Expenditure on Food among Urban Households and its Implication for Food Security: Evidence from Benue State, Nigeria, *African Journal of Food, Agriculture, Nutrition and Development*. Volume 14 No. 2 April 2014. <http://kaaa.co.ke/urban-farming-introduction/>

- [8] KENYA MINISTRY OF HEALTH (2015), Kenya Stepwise Survey for Non-Communicable Diseases, <https://www.knbs.or.ke/kenya-stepwise-survey-for-non-communicable-diseases-risk-factors-2015-report/>
- [9] MERCY E. N et al. (2016), Analysis of Household Consumption Expenditure on Selected Staple Foods in Ika Northeast Local Government Area of Delta State, Nigeria: Direct Research Journal Vol 4(10), pp. 300-307, October 2016 ISSN 2354-4147.
- [10] OBAYELU A. E et al. (2010), Analysis of Differences in Rural-Urban Households' Food Expenditure Share in Kwara and Kogi States of Nigeria: Global Journal of Agricultural Sciences Vol. 10, No. 1, 2011: 1-18.
- [11] OGUNMODEDE A. M & OMONONA B. T. (2020), Food as Medicine: Food Consumption Patterns and Reported Illnesses among Households, Review of Agricultural and Applied Economics, Vol. XXIII, Issue 2: 81-91.
- [12] OYAWOLE F. P., AKERELE D. & DIPEOLU A. (2016), Factors Influencing Willingness to Pay Organic Vegetables among Civil Servants in a Developing Country, International Journal of Vegetable Science.
- [13] V K, THOMAS MK, CIAMPA N, CUTLER J, HURST M, CURRIE A (2019). Comparison of 3-day and 7-day recall periods for food consumption reference values in foodborne disease outbreak investigations. *Epidemiol Infection* 2019 Mar 8;147:e129. <https://doi.org/10.1017/S0950268818003370>
- [14] YOON T. J. P., NGUI K. S, AND AGRAWAL A. (2011), Determinants of Willingness to Purchase Organic Food: An Exploratory Study Using Structural Equation Modeling," International Food and Agribusiness Management Review, International Food and Agribusiness Management Association, vol. 14(2), pages 1-18, May.