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**Save the Children**

## SUREFOOD PROJECT

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## Executive Summary

Food safety is an important component of food security that is often overlooked. Yet, approximately 600 million people globally fall ill after consuming food contaminated by bacteria, viruses, parasites, or chemical substances, and 420,000 die every year based on the World Health Organization (WHO) Food safety day June 2023. In Kenya, for example, contamination of meat, fruits, and vegetables is relatively common. There have been reports of kale contamination with fecal bacteria attributed to unsafe water for cleaning produce and meat contamination caused by poor hygiene practices, extensive manual handling of meat, limited worker skills, poor infrastructure, and inadequate supply of safe water (African population and health research center report July 2021). Other factors associated with food contamination include lack of structures to display food, growing of crops foods using unsafe/contaminated water, and food preparation in unhygienic environments.

### Research Objectives.

The purpose of this study was to identify the factors limiting food safety and implementation of public health standards in the selected markets of Kibra in Nairobi County. The key objective was;

- To establish commodities traded and food handling methods used in Kibra markets.
- To determine the level of traders awareness/knowledge on the implementation of public health standards in Kibra market.
- Determine the status water and sanitation and waste disposal in Kibra Markets.
- Determine the consumer preferences, perceptions and experience of the food safety and health standards in Kibra Markets.

### Study Methodology

Stratified proportionate random sampling technique was used to select the sample based on the Chandran (2004), stratified proportionate random sampling technique. The study grouped the population into three strata-food traders, customers and key informants. From each stratum the study used simple random sampling to select 465 respondents which include 21 key informants, 302 food traders and 142 consumers. The study utilized Kobo Collect for primary data collection. The questionnaires were administered through a face to face interview. A pre-test of the instruments was conducted to assess the clarity, validity and reliability of the instruments. It was after the pre-testing that the main survey followed.

Steps were taken to ensure the confidentiality of study participants was maintained. This included secure and encrypted storing of audio files. Once transcripts were quality checked, they were de-identified, using a remove and replace method. The respondents for the survey will not be asked for their names. Quantitative data was stored on the Save the Children secure server to allow secure access by a few members of the team. Quantitative data was analyzed using descriptive through excel and presented through percentages, means, tables and graphs. The qualitative data was coded thematically and analyzed statistically. Content analysis was used for data that is qualitative nature or aspect of the data collected from the open ended questions. The information was displayed by use of tables, graphs. The research was guided by international standards for best practice in social research and evaluations. Ethical approval for the study was sought and approved by Maseno University Ethics Review Board.

### Scope of the study

This study focused on several stakeholders in the city county markets. These included traders selling foods in the market, customers purchasing food commodities from the markets, market administrators, public Health Officers from the Health Wellness and Nutrition, Green Nairobi (Environment, Water, Food and Agriculture), Sectors at the county and other relevant actors. The target respondents were chosen because of their key role they play in the well-functioning of this markets

## The survey



The survey got views from 465 respondents; 142 consumers, 302 traders from different markets and 21 key informants. The average age for traders in the informal market is 42.2 years and in the municipal markets is 40.6. Considering all market types, the overall average age of female traders is 42.7 years, while for male traders it is 41.0 years. For the key informants, 8 of them were female and 13 male. For consumers the average age of female respondents was 42.3 while male was 41.8 years



About 94% of interviewed traders were from the informal markets, whereas 6% were from the municipal markets. The traders' distribution in the target markets are as follows; Makina accounted for a small percentage of the traders, at 3%, Matumbo Lane and Kenyatta Market are also home to a modest portion of the traders, each making up 12% of the total. The largest concentration of traders were in Toi Market, where 35% of the traders operate. Othaya/Woodley market markets had the highest number of traders, with a significant share of 36%. These numbers highlight the diverse trading landscape in the area, with a mix of smaller markets and larger trading hubs attracting different proportions of consumers. According to the study, 53% of respondents indicated that there is a waste management system in place in the surveyed markets, while 47% responded that there is no waste management system with plastic waste (*containers, bottles, wrappers, and other single-use plastic items*) accounting for a significant portion of the waste generated from the market at 86% while vegetable and fruit wastes accounts for approximately 71%. Wash facilities including toilets were not well maintained and are insufficient.

## Results

About 87%, of the food vendors indicated that they have never received training nor orientation on food safety with 78% saying that they are not aware of any food safety standards. 76.5% of traders use purchased water to clean their food items while 22% use piped water in the markets. This shows the level of concern amongst consumers. The results of the survey show that most consumers were concerned about the safety of their food with **55% indicating that the traders/food handlers do not wear personal protective clothing in the market, 41% were slightly worried.**



The survey also sought to find out the level of awareness amongst traders on the public health standards. About 22% of the respondents stated that they are aware of the public health standards in the Public Health Act regarding medical examinations, while 78% responded that they were not aware. On lack of awareness, the majority of respondents 78% stated that they are not aware of the public health standards in the Public Health Act regarding medical examinations. The majority of traders (82%) indicated that they have never attended a medical examination test or are not aware of the last time they had one.

The survey also showed that the markets have do not have functional handwashing facilities (with soap and running water) as reported by 66% of the respondents. Water availability varied among the surveyed markets. In most markets, water was available on a daily basis, allowing for regular access to clean water. Some markets have water available twice a week, which indicates a less frequent but still relatively consistent supply. Additionally, a few markets have water available three times a week. The variations in water availability suggest the need for better coordination and planning to ensure a consistent and reliable water supply for all markets.



Is the county government of Nairobi doing enough to ensure food safety in these counties? 43% of respondents indicate that there are some inspections conducted irregularly by a governmental regulatory body at the market to ensure food quality while 57% stated that such inspections do not take place in the markets particularly in the informal markets

Does the county government of Nairobi have food traceability system/mechanism to ensure that all the foods sold at the market can be traced to the supplier? Majority of key informant respondents (76%) indicated that the county government of Nairobi does not have a food traceability system or mechanism to ensure that all the foods sold at the market can be traced to the supplier.

A majority of food distributors (81%) to the markets are not certified to handle fresh food commodities, while only a small portion (19%) are certified. The absence of this certification may raise concerns about the quality and hygiene practices followed by these distributors.

### **Conclusion**

Food safety is an important component of food security that is often overlooked. Yet, many people particularly in the urban informal settlements of Kibra, Nairobi, county consume unsafe foods due to the low food safety and hygiene standards in the food markets. Limited worker skills, poor infrastructure, and inadequate supply of safe water, lack of structures to display food all contribute to consumption of unsafe foods. There is a need for effective and sustainable food safety interventions in such environments. Through the SUREFOOD project, Save the Children aims to promote food security in informal urban settlements by identifying food safety gaps among food traders. SC will engage Nairobi

County Government officials to advocate for proper infrastructure to be put in place to enhance 1) access to safe potable water, 2) access to sanitation facilities such as toilets, and 3) proper waste disposal. We hope to contribute to improving access to healthy and safe food in Nairobi through this initiative.

### **Recommendation**

From the above presentations of summary and conclusion, the study recommends the following:

To ensure full compliance with medical examinations, the study recommends that the traders continuously be trained on the importance of observing these provisions because of their spiral effect on the health standards of all consumers. Inadequate provision of waste management system (collection and disposal of solid wastes) is associated with a great range of disease vectors like cockroaches, houseflies and rodents, living and breeding within and around the solid waste areas. Attention may be given to the possibility of implementation practices such as composing, recycling of material into other products.

Consumer/traders awareness on food safety issues practices, and the legal and policy framework on food safety is paramount. Consumers and traders should also be sensitized on their role in ensuring food safety through reporting bad practices, adhering to public health standards and taking a leading role in advocating for both policy and legal mechanisms to ensure food safety. To further reduce incidents of food safety, the county government need to develop a food traceability system that include registering all the food suppliers in the market including the source of food being delivered with particular farm details (method of production and transportation to the market)

55%

Of traders/food handlers do not  
Wear personal protective  
Clothing in the market



### Introduction

In Kenya, residents of informal urban settlements especially in Kibra sub-county of Nairobi, face extreme poverty levels, poor access to basic hygiene and sanitation facilities, and food insecurity. Research by APHRC in 2021 shows that 80% of slum residents in this informal settlement of Nairobi are food insecure which partly explains the high malnutrition rates of close to 50% among children. To survive, these residents resort to different coping strategies: purchasing cheap, low-quality foods such as stale fruits and vegetables, scavenging for food in dumpsites, and dependence on street foods, often prepared in unhygienic conditions.



Globally, one in ten people fall ill after consuming contaminated food and **420,000 die from food-related illnesses every year.**

According to the United Nations World Health Organization Food safety day June 2023, unsafe food containing bacteria, viruses, parasites or chemical substances causes more than 200 diseases, ranging from diarrhea to cancers. Globally, one in ten people fall ill after consuming contaminated food and 420,000 die from food-related illnesses every year.

Food safety, food security and nutrition are linked. Unsafe food causes diseases, affecting food intake, which in turn leads to malnutrition. In the long-term malnutrition affects productivity, physical and cognitive development in children fueling a vicious cycle of poverty and food insecurity. The high costs of dealing with food-borne illnesses and the resultant effects in a population also puts pressure on public resources.

Children under five years  
Carry

# 40%

Of the foodborne disease burden, accounting for 125,000 deaths every year.



Meat Trader in Woodley/Othaya market



## Food safety in Kenya's urban informal markets

In Kenya's urban informal settlements, due to the absence of a strong regulatory framework, most of the food safety issues are yet to be addressed despite being brought to the attention of the relevant authorities. One of the major concerns based on the SureFood study is food handling both from the suppliers and the traders alike and also the insufficient water and sanitation facilities and waste management system- handling and disposal of waste.

Traders in a section of Woodley/Othaya market



The informality of the urban food markets present several challenges as far as food safety standards is concerned. There is poor quality control and health hazards that affects the safety of the foods sold in these markets. There is poor disposal of the unconsumed produce that contaminates the fresh produce sold to the consumers. The market vendors are not properly trained on how to handle the produce and often sell expired goods. Food safety is a major concern in these urban markets where fruits and vegetables are particularly vulnerable to contamination and often the result of lack of observance of the public health standards. Most food commodities are often contaminated due to poor storage, handling, display and waste disposal conditions. The lack of awareness and skills of the traders and consumers, as well as failures of inspection and enforcement of public health regulations by the Health Wellness and Nutrition Sector, add to the increasing problem and threats to the food safety and human health.

### SureFood Project.

The low-income households in the informal settlements (or slums) of Nairobi are particularly prone to food insecurity and malnutrition. There is an urgent need to strengthen their resilience against food and nutrition insecurity. The SureFood project aims at finding a sustainable solution for strengthening knowledge and resilience systems against food insecurity and malnutrition in the urban areas in Kenya through a comprehensive study. The project aims to provide insights on the challenges and opportunities towards provision of adequate, safe, nutrition-dense, preferred and affordable food for health and well-being of urban dwellers, with particular focus on the most vulnerable groups. The robust resilience analytics will provide data and analysis to the decision makers and the scientific community. A cross sectional study of the existing structures (e.g. formal, informal markets, urban agriculture) will provide evidence about the extent to which the markets delivers safe and adequate quantities of preferred foods, year round, for all urban dwellers, at affordable prices.

To achieve this the project will be implemented through two work structure. Namely:

1. **Market structures (formal and informal) food market capacity & quality (WP2):** this will explore the food safety status and the degree of supply diversity at the market-level by employing both qualitative and quantitative methods. A cross-sectional survey of a representative sample of informal food vendors in Kibera will collect detailed information on vendors, consumers and KII's socio-demographic and economic characteristics, sanitation, food handling and hygiene practices, food supply chain, food waste, and retail prices. Moreover, WP2 will also explore possible solutions to solid waste pollution, especially from plastic bags.
2. **Governance, policies and plans (WP4):** This will explore the various policies related to urban food security, nutrition, safety standards and urban food production. The analysis will focus on understanding how the existing Policy decisions affect elements of food systems including production, marketing, transformation and purchase of food, and the consumer practices, resources and institutions involved in these processes.



The outlined challenges and opportunities urge the scientific community and city governments to think about the ability of cities to respond to and be prepared for the threats, to develop strategies and build resilience of the city residents. Resilience is a concept that describes “the ability of an individual, a household, a community, a country or a region to withstand, adapt, and quickly recover from stresses and shocks such as drought, violence, conflict or natural disaster.”<sup>1</sup> The “urban resilience” is defined as “the measurable ability of any urban system, with its inhabitants, to maintain continuity through all shocks and stresses, while positively adapting and transforming toward sustainability.”<sup>2</sup> Strengthening the resilience against food and nutrition insecurities (Ashley, 2018) is the main target of the proposed project.

The project builds on and contributes to the existing policies in Kenya. The Urban Areas and Cities Act 2011, adopted by the Nairobi city government, promotes sustainable urban agriculture. This project will engage with the policy makers to ensure that the Act and other food-related policies are being implemented. What is more, the project will contribute two own supplementary instruments: a novel tool “Nutrition and health-driven food security policy generator” and an “Action Plan for Food & Nutrition Security” for Nairobi County.

### **Purpose of the study**

The purpose of this study was to identify the factors limiting food safety and implementation of public health standards in the selected markets in Kibra markets in Nairobi County.

### **Objectives of the Study**

- To establish commodities traded and food handling methods used the in Kibra markets.
- To determine the level of traders awareness/knowledge on the implementation of public health standards in Kibra market.
- Determine the status water and sanitation and waste disposal in Kibra Markets.
- Determine the consumer preferences, perceptions and experience of the food safety and health standards in Kibra Markets.

### **Significance of the study**

The study findings will contribute to the existing knowledge on public health in the market places. For scholars and academicians, the study will act as a source of reference for further research. To policy makers in the county government, the study will provide information which will guide their policy making process to ensure a health and secure markets for the County residents. The findings of this study can be used by the Nairobi County as a basis for improving the health standards in all the market in Nairobi informal settlements.

### **Scope of the study**

This study focused on several stakeholders in the council markets. These included traders selling foods in the market, consumers purchasing food commodities from the markets, market administrators, public Health Officers from the Health Wellness and Nutrition Green Nairobi (Environment, Water, Food and Agriculture) Sectors at the county and other relevant actors. The target respondents were chosen because of their key role they play in the well-functioning of this markets.

### **Methodology**

#### **Sampling Procedure and Sample Size**

From the population frame the required number of respondents were selected in order to make a sample. Stratified proportionate random sampling technique was used to select the sample. According to Chandran (2004), stratified proportionate random sampling technique produce estimates of overall

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<sup>1</sup> European Commission, International Cooperation and Development (2019): Food and nutrition security – resilience, online: [https://ec.europa.eu/europeaid/sectors/food-and-agriculture/food-and-nutrition-security/resilience\\_en](https://ec.europa.eu/europeaid/sectors/food-and-agriculture/food-and-nutrition-security/resilience_en) (accessed on 26.07.2019).

<sup>2</sup> UN HABITAT: Urban Resilience Hub – What is urban resilience? Online: <http://urbanresiliencehub.org/what-is-urban-resilience/> (accessed on 26.07.2019).

population parameters with greater precision and ensures a more representative sample is derived from a relatively homogeneous population. Stratification aims to reduce standard error by providing some control over variance.

The study grouped the population into three strata i.e. food traders, customers and key informants. From each stratum the study used simple random sampling to select 465 respondents. Stratified random sampling technique was used since population of interest is not homogeneous and could be subdivided into groups or strata to obtain a representative sample.

### Sampling Frame

Response	Sample Size
Key Informants	21
Food Traders	302
Customers	142
Total	465

**Data Collection Methods:** This study used questionnaires through Kobo Collect for primary data collection. The questionnaires were administered through a face to face interview.

**Pretesting the Questionnaires:** Before embarking on fieldwork, a pilot study was carried out to pre-test the instruments. This was done in order to assess the clarity of items, validity and reliability of the instruments. It was after the pilot testing that the main survey followed.

### Data handling protection and confidentiality:

Steps were taken to ensure the confidentiality of study participants was maintained. This included secure and encrypted storing of audio files. Once transcripts were quality checked, they were de-identified, using a remove and replace method. The respondents for the survey will not be asked for their names. Quantitative data was stored on the Save the Children secure server to allow secure access by a few members of the team.

**Data Analysis:** Quantitative data was analyzed using descriptive through excel and presented through percentages, means, tables and graphs. The use of structured questionnaires enabled the quantification of quantitative data using the size, frequency distribution, and association of variables in the study population and answers to questions that could be counted and expressed numerically. The qualitative data was coded thematically and then analyzed statistically. Content analysis was used for data that is qualitative nature or aspect of the data collected from the open ended questions. The information was displayed by use of tables, graphs

### Ethical Considerations:

The research was guided by international standards for best practice in social research and evaluations. Ethical approval for the study was sought and approved by Maseno University Ethics Review Board. The research team respected the principles of privacy, neutrality and impartiality as well as avoided proximity to conflict actors if any to ensure safety during the field survey. Informed consent was obtained from all participants before any data collection to gain their approval to participate in the survey.

## Study Findings

### TRADERS DEMOGRAPHIC AND MARKET INFORMATION

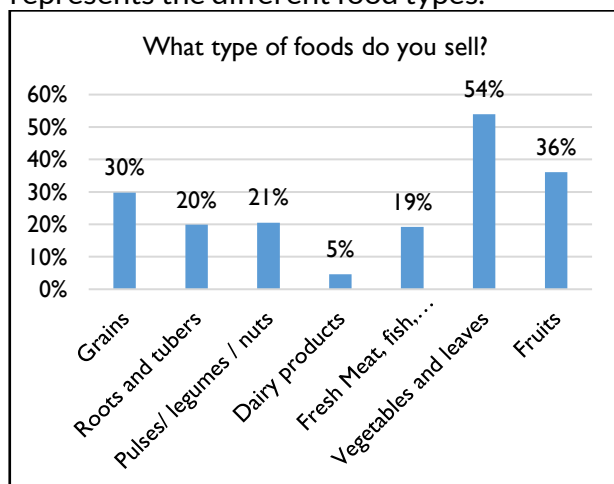
#### Distribution of traders by Market

The market assessment was conducted in Kibra city county and informal markets. 94% of interviewed traders (285) were from the informal markets, whereas 6% of (17) were from the city county markets as shown in figure 1 below.

In the informal markets, the average age of female traders is 43 years, while for male traders is 41 years. The overall average age in this market type is 42 years. In formal/municipal markets, the average age of female traders is 38 years, significantly lower than that of male traders at 46 years. The overall average age in city county markets is 40.6 years, indicating a notable age difference between female and male traders.

#### Types of food sold

The bar graph illustrates the types of foods sold in a market, with each category represented by a bar. The y-axis represents the percentage or number of traders selling each food category, while the x-axis represents the different food types.

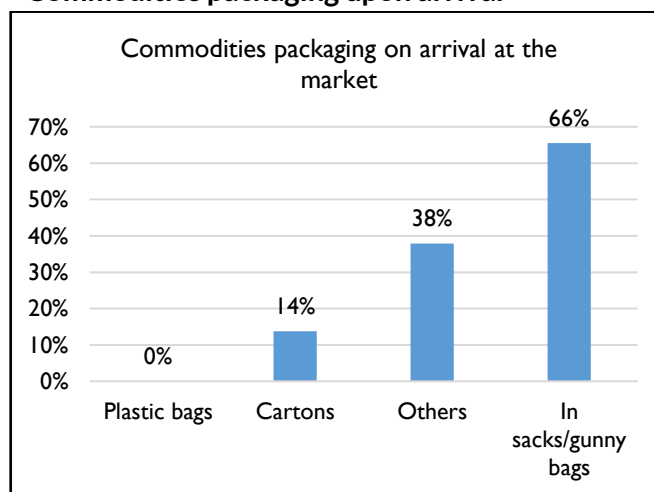


Traders in a section of Woodley/Othaya market

#### Who delivers the produce to the markets?

In the Informal markets, 29% of the individuals rely on others to deliver products, while the majority, 71%, handle the delivery themselves. In the city county markets, 29% of the individuals depend on others for product delivery, while 71% take on the responsibility themselves. Overall, when considering both Informal and city county markets together, 29% of the individuals rely on others to deliver products, while 71% handle the delivery themselves.

#### Commodities packaging upon arrival



### Categories of Food Sold

The largest category of produce brought to the market is fresh vegetables, accounting for 50% of the total. This indicates that a significant portion of the produce being sold in the market consists of freshly harvested vegetables that are in good condition. The next highest category is moderately ripe produce, representing 33% of the market offerings. This suggests that a considerable portion of the produce is at an intermediate stage of ripeness, neither completely unripe nor fully ripe. Ripe produce accounts for 25% of the market. This category likely includes fruits and vegetables that have reached their optimal level of ripeness and are ready to be consumed.

Dry produce represents 39% of the market, indicating the presence of dried goods such as grains, beans, or certain types of fruits that are intentionally dried for storage or preservation purposes.

The study noted that 34% of the traders do not provide packaging materials for their customers, while the 66% do provide packaging materials. "Single use plastic bags" account for 13% of the packaging materials. While they are convenient for customers, they are generally considered detrimental to the environment due to their non-biodegradable nature.

The category of "Mesh bags" makes up 21% of the packaging materials. Mesh bags are more environmentally friendly compared to single-use plastic bags as they are reusable and often made of breathable materials. "Khaki bags" represent 39% of the packaging materials. Khaki bags, typically made of fabric, are reusable and durable. They contribute to a sustainable environment by reducing waste and promoting responsible consumption. From a hygiene standpoint, khaki bags can be washed and reused, minimizing the risk of contamination.

The highest percentage, 77%, is attributed to "Biodegradable bags." Biodegradable bags are designed to break down naturally over time, reducing their impact on the environment. These bags align with sustainable practices and can contribute to a cleaner ecosystem. From a hygiene perspective, the use of biodegradable bags ensures that packaging materials do not

persist in the environment, reducing the risk of contamination. Regarding the Kenya packaging policy and the ban on plastic bags. Only 0.99% of the traders interviewed were not aware of the packaging policy and regulation. Through observation 97% of traders seemed to be adhering to the plastic ban

### Food Handling at the Markets

#### Food safety training

Food safety is of utmost importance in ensuring the well-being of consumers and preventing foodborne illnesses. It involves implementing proper handling, storage, and preparation techniques to prevent contamination and maintain the quality and safety of food products.

According to the study data, only 13% of the respondents stated that they or their employees have received orientation or training in food safety, while the majority, 87%, indicated that they do not have any such training. This finding raises concerns regarding the overall level of awareness and knowledge about food safety practices among the traders in the Kibra market.

The high percentage of traders without food safety training suggests a potential gap in knowledge and understanding of best practices in handling food. It highlights the need for targeted interventions, such as training programs or educational initiatives, to raise awareness about food safety and provide traders with the necessary knowledge and skills to ensure food safety in this markets. Addressing this issue is crucial to protect consumers' health and enhance the overall hygiene and sanitation levels in both municipal and informal markets in Kibra. The reasons provided by the traders for not receiving training or orientation in food safety is summarized as follows:

- i. **Lack of awareness:** Many traders mentioned that they have never heard of any training or are not aware that such training exists. They have not been approached or informed about food safety training opportunities.
- ii. **Personal experience and general knowledge:** Some traders believe that their experience and general knowledge about food handling are sufficient to ensure food safety. They rely on years of



- selling or common knowledge to handle food properly.
- iii. **Perceived low sensitivity of their business:** Some traders feel that their business, such as selling vegetables or dry products, does not require specialized training in food safety. They believe that the risks associated with their products are minimal.
  - iv. **Lack of time or opportunity:** Several traders mentioned that they have not had the chance to attend any training sessions due to a lack of time or because no one has offered them training.

#### **Considerations for traders during purchase of fresh suppliers**

**: Product Grade:** The majority of traders (63%) consider product grade to be extremely important when evaluating their purchase decisions. This indicates that the quality and classification of the products play a significant role in their decision-making process

**Product Price:** The price determines the cost-effectiveness and profitability of their business. The findings reveal that 54% of traders believe that the product price is extremely important when placing orders for fresh supplies. While the majority still considers it important, its rating is slightly lower compared to product grade, indicating that traders prioritize quality over price.

**Product Appearance:** Traders consider the appearance of food items as a crucial factor, with 62% rating it as extremely important. This indicates that the visual appeal, freshness, and overall condition of the products significantly influence the purchasing decisions of traders

**Product Freshness:** Freshness is a key attribute for fresh foods. Majority of traders (69%) consider freshness as an extremely important factor when ordering fresh supplies. This emphasizes the significance of delivering high-quality, recently harvested fruits and vegetables to meet the demands and preferences of consumers. The

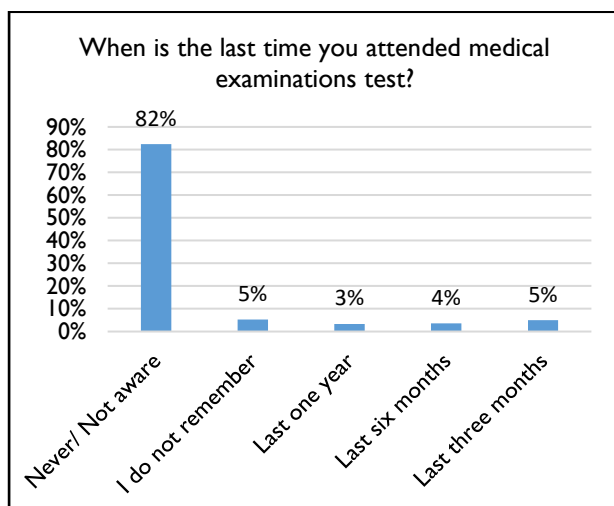
freshness of the produce determines its taste, texture, shelf life, and nutritional value, all of which impact consumer satisfaction and demand.

**Knowledge of the Supplier:** Traders place importance on their relationship and familiarity with the supplier. Knowledge of the supplier includes factors such as reliability, trustworthiness, consistency, and responsiveness to meet the traders' requirements. Traders assign varying levels of importance to having knowledge about the supplier, with 26% rating it as extremely important. While it is not as high as other factors, a significant proportion still considers it a crucial aspect.

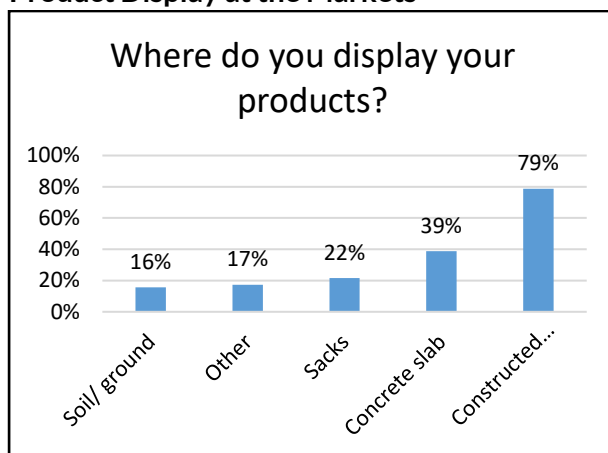
**Knowledge of the Source:** Traders consider having information about the source of the fresh foods as significant, with 26% rating it as extremely important. This implies that knowing the origin, cultivation methods, and quality standards of the products is crucial for ensuring transparency and meeting consumer preferences for traceability and sustainability. While it is rated lower compared to other factors, it still holds a substantial level of importance for a significant portion of traders.

#### **Awareness on Public Health Act**

Based on the provided data, 22% of the respondents stated that they are aware of the public health standards in the Public Health Act regarding medical examinations, while 78% responded that they are not aware. On the medical examination for the traders, majority of them (82%) indicated that they have never attended a medical examination test or are not aware of the last time they had one.



### Product Display at the Markets



### Use of Personal protective clothing

Based on the responses received, the analysis of whether individuals wear personal protective clothing when at work is as follows: 89% of the respondents stated that they do wear some personal protective clothing when at work (not wearing full personal protective clothing i.e. wearing only overall and head cover. 11% of the respondents mentioned that they do not wear personal protective clothing when at work. A summary of the reasons for not wearing full protective gear at work includes:

- Lack of perceived necessity: Many respondents do not consider wearing protective gear as necessary or see no need for it.
- Absence of personal protective clothing: Several individuals do not possess any protective gear, which hinders their ability to wear it at work.

- Financial constraints: Some respondents mentioned that the cost of acquiring protective clothing is prohibitive for them.
- Lack of awareness or understanding: Some individuals are not aware of the importance of wearing protective gear or do not view it as mandatory.
- Personal choice: A few respondents choose not to wear protective gear without providing a specific reason.
- Employer's responsibility: Some individuals reported that their employers have not provided them with protective clothing.
- Self-employment: Certain respondents who are self-employed or perceive their work environment as low-risk do not see the need for protective gear.
- Lack of availability: Some individuals do not have access to protective gear or have not purchased it yet.
- Not considering it important: A few respondents stated that they do not view wearing protective gear as important in their particular work setting.

### Water Sanitation and Hygiene at the Markets

The majority of traders, accounting for 88% reported having a stable supply of water for use i.e. washing food products. However, it is important to note that 12% of traders responded negatively, indicating that they do not have a stable supply of water. On water supply, the majority of the respondents, 76%, stated that they purchase water for use at the markets. This suggests that the traders in Kibra markets predominantly rely on purchasing water from external sources, possibly from water vendors or other suppliers which can pose a major water contamination issues because the water source is not known. Piped water (Nairobi Water): Approximately 22% of the respondents reported that their major source of water supply for the market is piped water. This indicates that a portion of the market traders rely on the municipal water supply system for their water needs. A very small percentage (0.33%) of the respondents reported relying on rainwater as their major source of water supply for the market.

### WASH Facilities

The market assessment show that the presence of functional handwashing facilities with soap and running water within the markets is reported as follows:

The majority of the respondents (66%) reported that there are no functional handwashing facilities with soap and running water in the market. This suggests that a significant proportion of traders in Kibra markets do not have access to adequate handwashing facilities to maintain proper hygiene and sanitation. Approximately 33% of the respondents confirmed the presence of functional handwashing facilities with soap and running water in the market. Additionally, 40% of the respondents reported that the market does not have functional toilets/WASH rooms with running water. This can pose challenges to maintaining proper hygiene and sanitation, especially in a market setting where regular handwashing is crucial for preventing the spread of diseases and ensuring food safety. Relevant interventions should be implemented to improve access to handwashing facilities and promote hygiene practices among the traders to ensure a healthier environment within the market.

### Familiarity with the Public Health and Sanitation Requirements

40% of the respondents reported being conversant with the provision of public health and sanitation requirements as per the Nairobi County by-laws. While 59% reported not being conversant with the County public health requirements. This implies that a significant portion of traders in Kibra markets are not familiar with the specific rules and regulations governing public health and sanitation practices.

Having an understanding of public health and sanitation requirements is essential for maintaining a clean and healthy market environment. It helps ensure that appropriate measures are taken to prevent the spread of diseases, maintain proper

hygiene standards, and protect the well-being of both traders and customers. The traders indicated that they recognize the importance of having a safe working environment thus ensuring food safety. Based on the responses provided by the traders, it can be summarized that their knowledge levels regarding public health and sanitation requirements are as follows:

- **Handwashing:** Many traders mentioned the importance of washing hands with soap and clean water. They recognize the need for personal hygiene and understand that regular handwashing helps prevent the spread of diseases.
- **Clean working environment:** Traders emphasized the significance of maintaining a clean and hygienic working space. They mentioned practices such as regular cleaning, sweeping, and sprinkling water to minimize dust.
- **Personal hygiene:** Traders highlighted the importance of personal hygiene, including wearing protective clothing, gloves, masks, hair nets, and gumboots. They emphasized the need to observe cleanliness and proper hygiene practices while handling food products.
- **Waste management:** Traders expressed the need for proper waste management system. They emphasized the importance of disposing of waste in designated areas and using dustbins to maintain cleanliness.
- **Toilets/washrooms:** Some traders mentioned the importance of having functional washrooms/toilets with running water and soap. They recognize the significance of having proper sanitation facilities within the market.
- **Food safety:** Traders mentioned the importance of selling safe and clean food products. They emphasized the need to proper storage and handling of food products.
- **Certification and regulations:** Some traders mentioned the need for certification and compliance with regulations when handling food

products. They emphasized the importance of adhering to public health and sanitation requirements.

It is encouraging to see that many traders have a good understanding of the importance of hygiene practices and are aware of the necessary measures to maintain a clean and safe market environment. Continuous education and awareness programs can further enhance their understanding and adherence to public health and sanitation requirements.

Based on the provided data, 43% of respondents indicate that there are some market inspections conducted by a governmental regulatory body at the market, while 57% state that such inspections do not take place. This distribution suggests a lack of consistent regulatory oversight and monitoring in the market, which can have implications for food safety and hygiene standards.

### Solid Waste Management System



Waste products from the market are stored in various ways. Here is a summary of the storage methods and their frequencies:

**Heaped at a corner at the market:** The most common method of storing waste at the market is by heaping them at a designated corner within the market area. This method was reported by 51.66% of responses.

**Left by the roadside outside the market:** Some waste are left by the roadside outside the market premises. This method of storage was mentioned by 8% of the responses.

**Put in bins:** Waste products are stored by putting them in bins. This method was selected by 16% of the responses.

**Put in sacks:** Another common method of storing waste is by putting them in sacks. This method was mentioned by 18% of the responses. This shows that a proper waste management system is not being implemented in the surveyed markets. The survey equally noted that there is some level of garbage disposal mainly to the landfill as reported by 53% of respondents.

### CONSUMER DEMOGRAPHIC

The average age of interviewed consumers in the Informal Market is 34 while in city county Market is 36. The overall age of interviewed consumers was 33. For the interviewed consumers in informal markets, 37% visit the market daily, 25% visit the market occasionally, 18% three times a week, 15% twice a week and 4% visit when necessary i.e. when buying household food in bulk. For the interviewed consumers in the city county markets, no consumer visited the market daily, 25% visit the market occasionally, 25% three times a week, 25% twice a week and 25% visit when only when necessary i.e. once a week.

Of all the interviewed consumers, 36% visit the market daily, 25% visit the market occasionally, 18% three times a week, 15% twice a week and 5% visit when only when necessary.

### Types of Food Commodities bought by Consumers at the Markets

28% of the consumers go to the markets to buy fruits, 33% to buy vegetables, 23% to buy cereals, 11% to buy meat and 6% to buy other commodities such as clothes.

### Food Safety and Hygiene in the Markets

41% of the consumers indicated that some food handlers/traders wear personal protective clothing while serving them in the market, 55% of the consumers believe that the traders/food handlers do not wear personal protective clothing in the market, of those, 6% of them to a very great extent, 24% of them to a great extent, 50% of them to a moderate extent, 19% of them



to a little extent and 4% did not know. 54% of the interviewed consumers believed the various markets were supplied with clean water, 7% of the consumers believed that there was no clean water in the markets and 39% did not know.

### **Quality of Food in the Market**

65% of the interviewed consumers reported to have gotten good quality food from the markets, 35% reported to have gotten very good quality food from the markets while none reported to have bought low quality food from the market. 99% of the respondents reported to have never experienced food poisoning and 1% said to have experienced food poisoning after they bought contaminated food. The respondents went to hospital and got treatment. They also avoided street food afterwards and improved on food preparation at their homes.

### **Consumer food quality preferences**

Approximately 39% of consumer purchasing food from this markets expect their food commodities they purchase to be "Very good," 52% of consumers rated their demand as "Good indicating a high level of importance placed on product safety.

### **Packaging for Consumers**

60% of the consumers provide their own carrier bags when purchasing commodities from the market, 33% of the consumers are provided by the traders and 7% sought for themselves from their areas of preference. All those who provided for themselves reported to have used the bags at least two times.

### **KEY INFORMANTS DEMOGRAPHICS**

The key informant interviews involved a total of 21 participants, with 8 of them being female (38%) and 13 being male (62%) of the total. The average age of female respondents was 42 years and that of male respondents was 42 years. When considering both male and female respondents together, the overall average age was 42 years.

### **Waste generated in the market**

The market generates various types of waste: Plastic waste constitutes a significant portion of the waste generated from the market, with a percentage of 86%. This category encompasses various plastic materials, such as plastic packaging, broken plastic containers, bottles, plastic wrappers, and other single-use plastic items. Vegetable wastes accounts for 71% of the waste generated from the market. It refers to the discarded or spoiled vegetables, including peels, trimmings, and other waste associated with vegetable products. 52% of the other market's waste encompasses waste generated by salons operating in the market-hair waste, unusable boxes, sacks, fabric bags, paper, glass, textile, metal from welding enterprises in the markets.

According to the data provided by key informants, over 55 tons of waste is generated weekly in the markets. This is a substantial amount of waste and indicates a significant volume of discarded materials within the specified time frame. This significant quantity of waste suggests the need for effective waste management system within the markets to reduce environmental impact and ensure sustainable waste management practices in long-term.

### **Waste Storage in the Markets**

Based on the key informant information, the storage methods for waste products from the market before disposal can be summarized as follows:

**Heaped at a corner inside the market:** This is the most common method of storage as mentioned by 57% of the key informants

**Waste bins:** Waste is placed in bins before disposal. This method suggests the presence of designated waste containers or bins within the market area. The percentage of mentions for this storage method is approximately 28%.

**Left by the roadside outside the market:** Some waste is left on the roadside outside the market area. This implies that waste is not properly contained or managed within the market boundaries, leading to waste accumulation outside. The percentage of mentions for this storage method is approximately 14%.

It is important to note that improper waste storage practices can have negative consequences for sanitation, and environmental. Encouraging the use of designated waste bins coupled with proper waste management infrastructure can help improve the overall cleanliness and food safety at the markets.

### Waste Management System



The sentiment analysis reveals a mixed perception regarding the existence of a waste management system in the market. While a majority of the key informants indicate the presence of some waste management system, a significant proportion still believes that there is no such system in place. Based on the descriptions provided by the key informants, the waste management system can be summarized as follows:

**Waste Collection:** Waste is collected by county workers or individual traders and heaped within the market or in limited bins provided by the county.

**Sorting:** In some instances, sorting of waste is mentioned, primarily by individuals such as street children who pick out valuable items such as plastics, metals, and clothing. There is no explicit or systematic sorting conducted by the county.

**Transportation:** County trucks or Lorries are responsible for the transportation of the waste to the dumpsite.

The descriptions provided by the key informants suggest that the waste management system involves waste collection from the market, transportation to the dumping site, and disposal without comprehensive sorting or separation. The involvement of individual traders and the presence of people at the dumping site who

sort through the waste indicate some level of informal recycling.

The majority of key informants (81%) mentioned that Nairobi County is responsible for waste management in the market. This indicates that the county government has the primary authority and oversight to ensure proper waste management practices are implemented within the market. It suggests that the county is expected to coordinate waste collection, sorting, transportation, and disposal activities. A smaller proportion of key informants (19%) indicated that market operators or vendors hold responsibility for waste management in the market.

### Food Premises Inspection within the Markets

Based on the responses from the KIIs, it is evident that there is some uncertainty and lack of knowledge regarding whether food premises are inspected prior to the issuance of operating licenses. While a significant portion of respondents (38%) indicated that inspections do take place, a considerable number (19%) stated that no inspections occur. Additionally, a significant portion of respondents (43%) expressed uncertainty or lack of knowledge about the inspection process. The frequency of the inspections is reported as quarterly by 57% of respondents who indicated that there is some level of food markets inspection. Weekly inspections were mentioned 24% of the time, while monthly inspections were mentioned 19% of the time.

This mixed response suggests a potential inconsistency or lack of clarity in the enforcement of regulations pertaining to food premises inspections. It is important for regulatory authorities to provide clear information to stakeholders on the premise inspection procedures and requirements. This can help enhance food safety and hygiene practices within food premises, protecting the health and well-being of consumers.

### Food traceability system (Farm to Market)

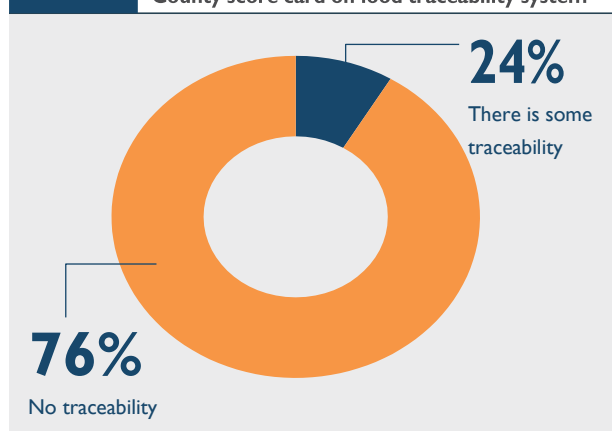
According to the data, the majority of respondents (76%) indicated that the county government of Nairobi does not have a food traceability system or mechanism to ensure that all the foods sold at the

market can be traced to the supplier.

This information is based on the responses provided by the participants and may not represent the definitive situation regarding the existence of a food traceability system in the county government of Nairobi. Further investigation or confirmation from official sources would be required to obtain a more



County score card on food traceability system



accurate and comprehensive understanding of the current status of food traceability in the county.

Among those that stated there was some level of food traceability system done by relevant authorities. However they don't have a systemic food traceability system that enable supplies to report on the origin of food commodities.

Key recommendation noted by the respondents include:

**Record-keeping:** Market officials and market masters should maintain records of suppliers and their products in the market. This record-keeping system helps to track the origin of the foods sold.

**Branding and registration:** The law requires products to be branded with the original producer's trademark. Farms or farmers associations are encouraged to register their products. This helps in identifying and tracing the source of the food products.

**Licensing and registration of suppliers:** food suppliers are required to obtain licenses, which ensures traceability of their activities. This process helps in keeping track of who is selling what in the market.

**Inspection teams:** There is an inspection team responsible for monitoring the market and noting down information about buyers and sellers. This team should do this effectively by documenting the source of various food products.

It was also noted that a majority of food suppliers (81%) to the markets are not certified to handle fresh food commodities. This suggests that there is a lack of certification among food distributors, indicating potential challenges in ensuring proper handling and safety of fresh food commodities. The absence of certification may raise concerns about the quality and hygiene practices followed by these distributors

Certification on food supply is typically important as it ensures that food handlers and distributors have undergone training and comply with the necessary standards and regulations for handling fresh food commodities. It helps to ensure that proper food safety practices are followed throughout the distribution process, from sourcing to delivery.

The certification of food distributors is done through a process of registration, licensing, and

monitoring by the relevant authorities. The city council is responsible for granting licenses to distributors who meet the required standards for handling and selling food products in the markets.

To obtain certification, food distributors are expected to go through a registration process where they provide necessary information and meet specific criteria set by the authorities. Once registered, they can apply for a license that authorizes them to supply food commodities in the markets.

Regular inspections and monitoring play a crucial role in ensuring compliance with food safety and quality standards. Both the city council and market masters should conduct frequent and impromptu visits to check on the operations of food distributors. These inspections should aim at assessing the adherence to regulations, inspect the storage and handling practices, verify the quality of the fresh food commodities being supplied and identify any capacity development needs of suppliers that can contribute to ensuring the delivery of safe and fresh food commodities to the markets.

## FOOD PRICES

Based on the analysis the market study shows trends in trader and consumer preferences and behavior for the listed food items. Here are some key insights:

**Importance of staple foods:** Given that Kibra is an informal settlement, staple foods like maize flour (18%), rice (25%), and beans (19%) are likely to be in high demand. These items are often affordable and provide a significant source of household nutrition, making them essential components of the local diet.

**Preference for fresh produce:** Despite being an informal settlement, there is still a notable demand for fresh fruits and vegetables, as indicated by the percentages of traders selling items like watermelon (19%), tomatoes (19%), apples (19%), papaya (25%), pineapple (25%), carrots (25%), and onions (25%). This suggests that residents in Kibra value access to nutritious and fresh produce, despite potential economic challenges.

**Protein sources:** The presence of traders selling chicken (25%), pork (19%), mutton (19%), and cow meat (19%) indicates a demand for protein-rich foods in Kibra. These items may be considered occasional indulgences or special ingredients due to their relatively higher cost compared to staple foods.

**Affordable protein options:** Legumes such as lentils (9%), green grams (9%), pigeon peas (19%), and cowpeas (kunde, 19%) are likely to be popular in Kibra due to their affordability and nutritional value. These options provide residents with a more cost-effective source of protein and are commonly used in local recipes.

**Preference for cassava:** The higher percentages of traders selling both fresh cassava (25%) and dry cassava (25%) suggest that cassava is a popular staple in Kibra. Cassava is a versatile crop that can be prepared in various ways and is often more affordable than other starchy alternatives.

**Limited demand for certain vegetables:** While some vegetables like kales (Sukuma wiki, 12%), jute mallow (Murenda 19%), and black nightshade (Managu 19%) are still present in the market, their lower percentages indicate that they may have slightly lower demand compared to other food items. This could be influenced by factors such as availability, cost, or cultural preferences within the Kibra community. Considering the informal nature of the markets in Kibra, affordability is likely a significant factor in consumer purchasing decisions. Traders may cater to this preference by offering a range of affordable food items to meet the needs of the local population. Understanding these preferences and behaviors within these markets in Kibra Nairobi can help traders, policymakers, and organizations tailor their offerings and interventions to meet the specific needs of the community. It can also inform initiatives focused on improving food security, affordability, and access to nutritious options in the region.



## Unit cost per food Item in Ksh.

Fruit(Quantity)	Unit Price (Ksh)	Grains (Quantity)	Unit Price (Ksh)	Legumes (Quantity)	Unit Price (Ksh)	Meat and Milk (Quantity)	Unit Price (Ksh)	Roots and tubers (Quantity)	Unit price (Ksh)	Vegetable (Quantity)	Unit price (Ksh)
Watermelon 1kg	88	Maize (1kg) packed	113	Soya beans 1kg	167	Fresh Milk 1 Lt	77	Sweet potato 1Kg	133	Amaranth (Dodo) Bunch	8
Ripe Bananas 1kg	96	Wheat flour (Unga ngano) 1kg	124	Pigeon peas (Mbaazi) 1kg packed	169	Sour milk 1 Lt	119	Fresh cassava 1kg	133	Cowpeas (Kunde leaves) Bunch	8
Green bananas 1kg	97	Fresh maize (mahindi mbichi/ green) 1kg	126	Cow peas (kunde) 1kg packed	177	Dry fish 1kg	165	Carrots 2kg	194	Jute mallow (Mrenda) Bunch	9
Oranges 1kg	129	Rice (Mchele) 1kg	167	Green gram 1kg packed	188	Fresh fish omena 1kg	209	Irish potatoes 2kg (Gorogoro)	229	saga Bunch	9
Papaya 1kg	131	Maize 2kg	204	Lentils (1kg)	243	Pork 1 kg	421	dry cassava 2kg	262	Kales (Sukuma Wiki) 1 Bunch	9
Pineapple 1kg	149	Sorghum (Mtama) 2kg	224	Dry Beans (average price for the various varieties) 2kg	389	eggs 1 crate	454			Black nightshade (Managu) Bunch	9
Apple 1kg	201	Millet flour 2kg	293			Chicken 1kg	525			Spinach 1 Bunch	9
		Millet (Wimbi) 2kg	307			Cow meat 1kg	592			Onions 1kg	98
						Mutton 1kg	642			Tomatoes 1kg	102
										Peppers 1kg	107
										French/Green beans 1kg	164

## Conclusion

Food safety is an important component of food security that is often overlooked. Yet, many people particularly in the urban informal of Kibra, Nairobi, and County consume unsafe foods due to the low food safety and hygiene standards in the food markets. Limited worker skills, poor infrastructure, and inadequate supply of safe water, lack of structures to display food all contribute to consumption of unsafe foods. There is a need for effective and sustainable food safety interventions in such environments. Through the SUREFOOD project, Save the Children aims to promote food security in informal urban settlements by identifying food safety gaps among food traders. SC will engage Nairobi City County Government officials to advocate for proper infrastructure to be put in place to enhance 1) access to safe potable water, 2) access to sanitation facilities such as toilets, and 3) proper waste disposal. We hope to contribute to improving access to healthy and safe food in Nairobi through this initiative.

## Recommendations

- a) **Awareness creation amongst consumers/traders.** Through this study, it was clear that there is a need for more consumer/traders awareness on food safety issues practices, and the legal and policy framework on food safety. Consumers and traders should also be sensitized on their role in ensuring food safety through reporting bad practices, adhering to public health standards and taking a leading role in advocating for both policy and legal mechanisms to ensure food safety.
- b) **Foster multi-sectoral and multi-layer collaboration.** All stakeholders, including the consumer, need to work together to realize and sustain gains in food safety. The engagements during this survey clearly showed that most actors within government and outside working on food safety do so in isolation. This reduces efficiency in interventions and creates unnecessary duplication in roles that sometimes result in conflicting approaches and mandates.
- c) **Establishment and implementation of a robust legal and policy framework on food safety.** The study on food safety in the target markets showed a clear gap in both policy and legal frameworks on food safety. All the markets surveyed lacked clear, actionable food safety strategies, despite the effort being provided by the county government of Nairobi. The county legal framework on food safety need to be implemented in its totality and or enact and operationalize additional county laws on food safety to address the current legal framework gap.
- d) **Develop and implement a consumer reporting/feedback mechanism.** While consumers interact with food safety issues every day, there is no precise mechanism to report food safety issues. There is a need for counties to consider developing a food safety system that will help gather food safety issues from consumers for immediate action and long-term policy/legal interventions.
- e) **Regular market monitoring.** Regular monitoring in food markets came up as one of the critical recommendations from the survey based on feedback from the different stakeholder interviewed. Monitoring helps to ensure that the set food safety standards and procedures are observed in handling of food and food commodities at the market level. Regular monitoring can also help identify emerging gaps, both structural and institutional, which can help design practical and timely interventions.
- f) **Food Traceability System.** Food safety begins at source. From the survey it's clear that food source tracing is a major issue and a likely contributor to food safety issues in the markets. The county government need to develop a food traceability system that include registering all the food suppliers in the market including the source of food being delivered with particular farm details (method of production and transportation to the market)
- g) **Medical Test and certification.** Food handling came out as a critical part of food safety in the markets. The study noted a huge number of traders/suppliers not certified to handle food commodities. The county should ensure that all the food handlers in the market

including suppliers should undergo a proper medical test, wear protective clothing and also are certified to handle food commodities based on the public health standards and procedures. This can minimize food safety issues in the markets.

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