

# HCP REPORT NO. 11: THE STATE OF HOUSEHOLD FOOD SECURITY IN NAIROBI, KENYA

Owuor, Samuel;

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# THE STATE OF HOUSEHOLD FOOD SECURITY IN NAIROBI, KENYA

THE STATE OF HOUSEHOLD  
FOOD SECURITY IN  
NAIROBI, KENYA

SAMUEL OWUOR

SERIES EDITORS: PROF JONATHAN CRUSH  
AND DR LIAM RILEY

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## Previous Publications in the Hungry Cities Report Series

- No 1** *The Urban Food System of Nanjing, China*
- No 2** *The Urban Food System of Maputo, Mozambique*
- No 3** *The Urban Food System of Cape Town, South Africa*
- No 4** *The Urban Food System of Kingston, Jamaica*
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- No 9** *The State of Household Food Security in Nanjing, China*
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# EXECUTIVE SUMMARY

This report presents the results of a city-wide household food security survey conducted by the Hungry Cities Partnership and the University of Nairobi in July 2015. The survey was administered to a total of 1,434 households in randomly selected administrative sub-locations spread across all administrative districts and divisions of Nairobi City County. The first part of the report provides a demographic and economic profile of the sampled households. Nuclear family households were the most common household structure (at 55%), followed by male-centred (20%) and female-centred households (17%). The dominant income source was formal wage work, although only 46% received income in this form. Other major sources of income were informal wage work (20%), formal businesses (19%), formal and casual wage work (13%), and informal selling of goods (11%). Only a few households (less than 2%) receive income from grants, loans, gifts and cash remittances.

The survey used four indicators to assess the different dimensions and levels of food insecurity in the city (the HFIAS, HFIAP, HDDS and MAHFP). Among the key findings were the following:

- There was considerable variation in HFIAS scores across the city. About three-quarters of the sampled households had HFIAS scores between 1 and 9. About one-quarter (24%) had scores between 10 and 18, while the remaining 3% had very high HFIAS scores between 19 and 27.
- Variability was confirmed by the HFIAP, which found that only 29% of households were completely food secure. On the other hand, 25% were severely food insecure and one-third were moderately food insecure. Combining the categories, around 70% of households therefore experience food insecurity.
- The mean HDDS was 6.0, an indication of a reasonable dietary diversity. However, the distribution of scores depicted a normal curve with a significant number of households with low and high dietary diversity respectively. Twelve percent of the households had a score of below 4 and therefore lack the diversity in diet considered to be a pre-condition for good health.
- About half of the households reported that there were some months in the preceding 12 months when they did not have enough to eat. The MAHFP indicator found that the overall average months of adequate household food provisioning was 10.8, with 44% of households having scores between 7 and 11.
- Moderately and severely food insecure households also have a higher likelihood of going without food due to unaffordability. Some 62% of severely food insecure and 46% of moderately food insecure households went without food at least once a week due to food price increases in the previous six

months. On the other hand, eight out of every 10 food secure households never experienced any food shortages.

By cross-tabulating the food security indicators with household demographic and household characteristics, insights are provided into some of the reasons for levels of variability in food security. For example, the poorer the household, the lower (worse) the mean HDDS scores, the higher (worse) the mean HFIAS scores, and the lower (worse) the mean MAHFP scores. Households in the lowest income quintile have a mean HDDS of 5.19, a mean HFIAS of 9.89 and a mean MAHFP of 9.74, compared to households in the highest income quintile with means of 7.37, 2.06 and 11.71 respectively. Female-centred households have the lowest (worst) mean HDDS score, the highest (worst) HFIAS and lowest (worst) MAHFP. Nuclear families score best on the HDDS, indicating greatest dietary diversity, and have the lowest HFIAS, indicating the best overall levels of food security.

The sampled households in Nairobi have a wide range of food sources as the following findings clearly show:

- The most commonly patronized food sources are small shops (82% of households), supermarkets (79%) and kiosks (69%). Small shops and kiosks are convenience stores located within neighbourhoods and sell fast-moving lower-order goods needed on a daily basis by neighbourhood residents. More than 70% of the households use these small shops and kiosks on an almost daily basis.
- Supermarkets are growing in importance as a source of food in both the wealthier and poorer neighbourhoods of Nairobi. Most are frequented by the households on a monthly basis for bulk shopping.
- The Nairobi City County markets are patronized by 51% of the households. These designated enclosed and open-air markets across the city are usually frequented at least once a week, largely for fresh food products.
- The informal food economy (street sellers and traders) is growing in importance and is frequented on an almost daily basis by 61% of the households. Consumers believe that the informal food economy offers a wide range of products at a cheaper price than the formal food outlets. However, the choice of formal or informal food sources depends on perceptions of a range of factors including affordability, variety, flexibility, proximity, convenience, credit facilities, health risks, freshness and quality.

The Hungry Cities Food Purchases Matrix (HCFPM) shows which kinds of foods are purchased at which outlets, as well as how many households purchase a particular food item. Main findings included the following:

- The most frequently purchased foods in the month prior to the survey were maize meal, white bread, rice, fresh vegetables, fresh fruit, fresh meat, eggs,

fresh milk, sugar and cooking oil. Each was purchased by over three-quarters of the sampled households. White bread, fresh vegetables and fresh milk tend to be purchased almost daily. Eggs and fresh fruit are purchased once a week and fresh meat twice a month. Maize meal, rice, sugar and cooking oil tend to be purchased once a month.

- The HCFPM also records where the household normally obtains each food item from a list of over 30 items. For example, 63% of households normally purchase their maize meal at a supermarket, 27% at a small shop and 14% at a kiosk. There are exceptionally strong associations between some food items and their main sources. Supermarkets emerge from this analysis as a key source for foods including maize meal, rice, pasta, tinned foods, frozen foods, tea, coffee, sugar and confectionary. They are much less popular for the purchase of fresh fruits and vegetables, which are obtained from a variety of other formal and informal sources.
- Small shops stand out as the main source for white bread, although a third of households also purchase this item at supermarkets and kiosks. Most households obtain their meat and offal from butcheries.
- Formal markets are popular for fresh vegetables, fruits and fish, while informal markets are popular for fresh vegetables, fruits, chicken and fish. Street traders are popular for fresh vegetables, fruits and fish.

Non-market sources of food proved to be far less important than expected. For example, only 29% of households depend on rural agriculture and even fewer (less than 10%) on urban agriculture and livestock keeping as a source of food. The households that did not practise urban agriculture had different perceptions about the activity. About three-quarters agreed that the major constraint was that they did not have land on which to grow crops. As many as 80% of the households disagreed that farming is only for rural people, that they lack the skills to grow food (69%), that they do not have access to inputs (66%), that they have no interest in farming (64%), that they do not have the time or labour (56%), and that people would steal whatever they grew (53%). These findings demystify some of the negative perceptions about urban agriculture and show that the primary obstacle to growing food in Nairobi is land availability.

Finally, households in Nairobi rely to varying degrees on an informal, non-marketed supply of food from their relatives and friends in urban and rural areas. More than half (57%) of the households reported that they had received food transfers from other urban and rural areas in the previous year. Eight out of every 10 households receiving food transfers get them from relatives in the rural areas. Transfers are dominated by cereals (primarily maize); roots and tubers (primarily potatoes); vegetables (primarily traditional vegetables); fruits; meat products (primarily chicken); and beans, peas, lentils and nuts.



As the first city-wide survey of household food security in Nairobi, this report provides researchers and policy-makers with detailed data and information about the overall food security picture in Nairobi, as well as important insights into the operation of the city's food system. In particular, the report demonstrates the central importance of the informal food sector, which will be explored in greater detail in the next HCP report on Nairobi.

# 1. INTRODUCTION

This report presents and analyzes the findings of a city-wide household food security survey conducted by the Hungry Cities Partnership in Nairobi, Kenya, in July 2015. It should be read in conjunction with *HCP Report No. 6: The Urban Food System of Nairobi, Kenya*, which provides essential background on the history, growth, demography, geography and economy of Kenya's capital. This report, which provides an up-to-date overview of the state of household food security in Nairobi's changing food system, is divided into seven sections. The second describes the survey methodology and the third analyzes the demographic and socio-economic characteristics of the sampled households, including household size, age distribution, household structure, income and expenditure, levels of education, work status, dwelling type, and poverty profile. The fourth section is an analysis of household food insecurity in Nairobi using the Household Food Insecurity Access Scale (HFIAS), Household Dietary Diversity Score (HDDS) and Months of Adequate Household Food Provisioning (MAHFP) indicators. It also focuses on households' experiences of food price changes and hazards affecting access to food. In the fifth section, food security scores are cross-tabulated with household characteristics to gain a more detailed view of the factors that shape food security in Nairobi. Section six describes the sampled households' food sources, food purchase matrix (by type and frequency), perceptions of supermarkets and urban agriculture, the practice of urban agriculture in Nairobi, and food transfers in terms of sources, types, frequencies and importance.

# 2. METHODOLOGY

The Nairobi survey covered a total of 1,434 households. To generate as representative a city-wide sample as possible, the survey was conducted in randomly selected administrative sub-locations spread across all the administrative districts (or sub-counties) and divisions of Nairobi City County. The sampled households were randomly selected from these administrative sub-locations. The households were located in 23 administrative locations and sub-locations, covering all the administrative divisions and districts of Nairobi City County. Table 1 gives a summary of the sampled areas. Nairobi is divided into four administrative districts (or sub-counties): Nairobi West, Nairobi East, Nairobi North and Westlands. The districts are further sub-divided into eight administrative divisions. These are Dagoretti and Kibera (in Nairobi West); Embakasi and Makadara (in Nairobi East); Central, Kasarani and Pumwani (in Nairobi North); and Westlands division (in Westlands). These divisions are further divided into a total of 49 administrative locations. Lastly, the locations are split into 111 sub-locations,

which are the lowest administrative units in Kenya. The survey covered sampled households in 23 of the administrative sub-locations of Nairobi City County.

**TABLE 1: Sampled Administrative Sub-Locations in Nairobi**

| Sampled sub-location*   | Division   | District      |
|-------------------------|------------|---------------|
| 1. Kawangware           | Dagroretti | Nairobi West  |
| 2. Kenyatta/Golf Course |            |               |
| 3. Riruta               |            |               |
| 4. Karen                | Kibera     |               |
| 5. Lindi                |            |               |
| 6. South C              |            |               |
| 7. Embakasi             | Embakasi   | Nairobi East  |
| 8. Komarock             |            |               |
| 9. Umoja                |            |               |
| 10. Hamza               | Makadara   |               |
| 11. Makongeni           |            |               |
| 12. Hazina              |            |               |
| 13. Huruma              | Central    | Nairobi North |
| 14. Pangani             |            |               |
| 15. Ngara East          |            |               |
| 16. Zimmerman           | Kasarani   |               |
| 17. Roysambu            |            |               |
| 18. Uhuru               |            |               |
| 19. Shauri Moyo         |            |               |
| 20. Bondeni/Gorofani    |            |               |
| 21. Highridge           | Westlands  | Westlands     |
| 22. Kileleshwa          |            |               |
| 23. Spring Valley       |            |               |

\* The administrative units are based on the 2009 Kenya Population and Housing Census

The number of sampled households was determined using a multi-stage proportional-to-population size (PPS) random sampling procedure. First, a random sample of three administrative locations in each administrative division was selected, except for Kasarani where only two were selected. This gave a total of 23 locations out of the 111 in Nairobi City County. Next, the number of households sampled in each selected sub-location was proportional to the total number of households in that sub-location (see Table 2). Lastly, depending on the form and density of the sub-location, a random sampling procedure was used to select the sampled households in residential neighbourhoods (estates) in the sub-location. Although the sample sizes for each sampled administrative sub-location were, as far as practically possible, proportionate to the total number of households in each sub-location, it is not possible to guarantee full representativeness. This is largely due to the fact that the final selection of households was, in some instances, influenced by external factors such as the form and density of

the sub-location, security considerations, cooperation from administrative officials, availability of sampling frames, availability of respondents during working days, willingness of respondents, access to gated communities, determination of spatial coverage area in the sub-location, and suspicion due to the political climate in Kenya during the survey period.

**TABLE 2: Location of Sampled Households by Sub-Location**

|                               | No. of households in sub-location | No. of sampled households |
|-------------------------------|-----------------------------------|---------------------------|
| <b>Nairobi West District</b>  |                                   |                           |
| <b>Dagoretti Division</b>     |                                   |                           |
| Kawangware                    | 22,262                            | 192                       |
| Kenyatta/Golf Course          | 5,987                             | 27                        |
| Riruta                        | 20,245                            | 94                        |
| <b>Kibera Division</b>        |                                   |                           |
| Karen                         | 2,861                             | 21                        |
| Lindi                         | 11,551                            | 74                        |
| South C                       | 13,759                            | 49                        |
| <b>Nairobi East District</b>  |                                   |                           |
| <b>Embakasi Division</b>      |                                   |                           |
| Embakasi                      | 19,815                            | 111                       |
| Komarock                      | 8,039                             | 46                        |
| Umoja                         | 28,097                            | 160                       |
| <b>Makadara Division</b>      |                                   |                           |
| Hamza                         | 5,348                             | 65                        |
| Makongeni                     | 3,744                             | 43                        |
| Hazina                        | 6,445                             | 50                        |
| <b>Nairobi North District</b> |                                   |                           |
| <b>Central Division</b>       |                                   |                           |
| Huruma                        | 23,800                            | 112                       |
| Pangani                       | 9,343                             | 58                        |
| Ngara East                    | 5,067                             | 30                        |
| <b>Kasarani Division</b>      |                                   |                           |
| Zimmerman                     | 10,309                            | 62                        |
| Roysambu                      | 9,002                             | 55                        |
| <b>Pumwani Division</b>       |                                   |                           |
| Uhuru                         | 6,450                             | 40                        |
| Shauri Moyo                   | 5,304                             | 41                        |
| Bondeni/Gorofani              | 1,824                             | 17                        |
| <b>Westlands District</b>     |                                   |                           |
| <b>Westlands Division</b>     |                                   |                           |
| Highridge                     | 8,075                             | 50                        |
| Kileleshwa                    | 4,592                             | 24                        |
| Spring Valley                 | 1,378                             | 13                        |

\* The administrative units are based on the 2009 Kenya Population and Housing Census

The Nairobi case study research team comprised the coordinator, a field supervisor, data capturing manager and 29 enumerators. The enumerators were divided into smaller teams on a daily basis. The research team underwent a two-day training exercise to understand the questionnaire and associated data capturing tools adequately. The survey took 14 days to complete.



HCP/Nairobi Research Team Members

Source: Sam Owuor



Interview Using Tablet Technology

Source: Andrea Brown

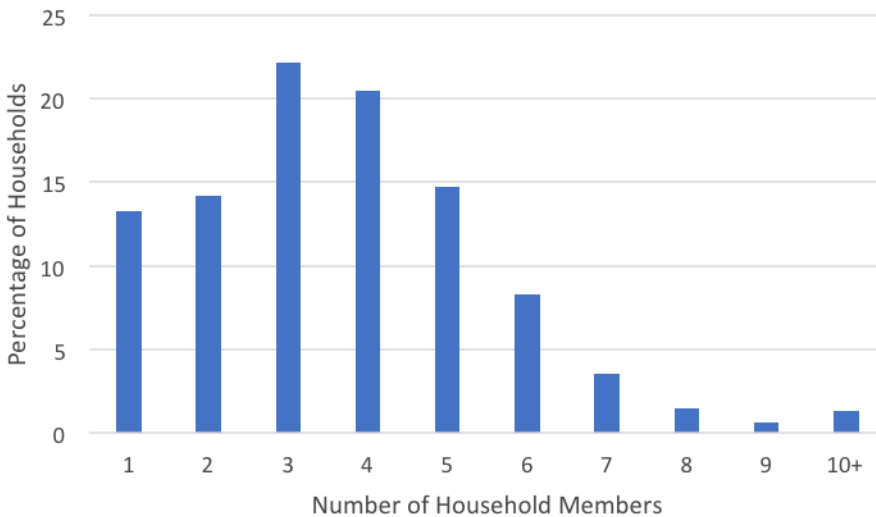
## 3. PROFILE OF SAMPLED HOUSEHOLDS

Much of the research on Africa considers the household as the basic unit of social analysis. However, the concept of household is complex and has many aspects that are difficult to combine into one clear definition. For the purposes of this survey, a household consists of a person or a group of persons who eat and sleep in the same dwelling unit for at least six months per year, including children and those who are away for work, school or other reasons.

### 3.1. Demographic Characteristics

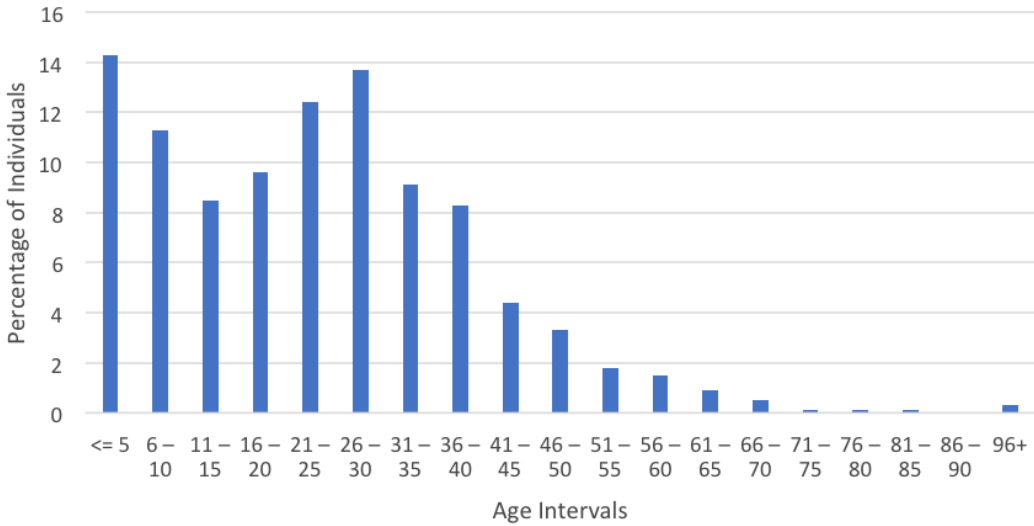
The average household size of the sampled households in Nairobi was 3.71. The household sizes ranged from a minimum of one member to a maximum of 22 members, with a median of four members. However, about half of the households were relatively small households of one to three members. Another 44% were medium-sized households of four to six members, while a smaller number (7%) were large households of more than six members (Figure 1).

**FIGURE 1: Distribution of Household Size**



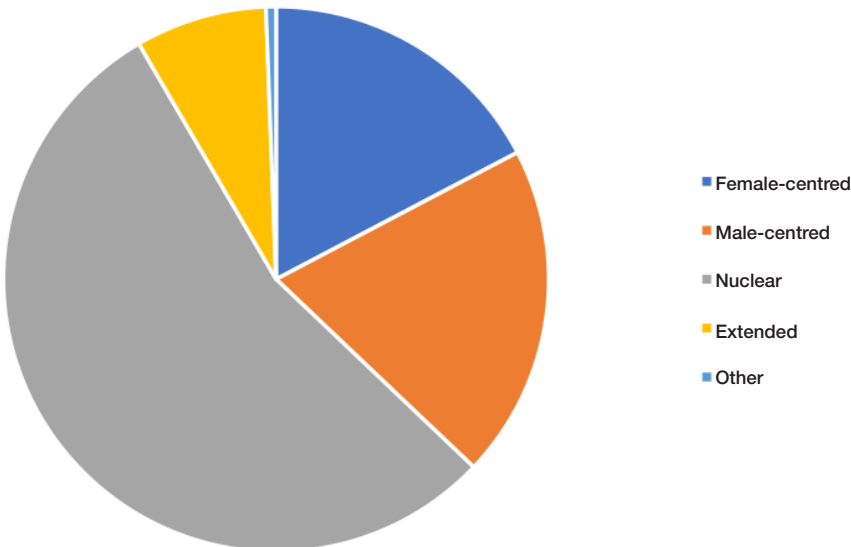
The age of each household member was collected and it is evident from Figure 2 that more than three-quarters (79%) of the household members can be categorized as young; that is, aged 35 years and younger. Over 40% were under the age of 20. Another 19% can be categorized as middle-aged (36-60 years old), while only 2% of the members were old (over 60 years).

**FIGURE 2: Age of Household Members**



The survey gave respondents the option of choosing one of four types of household structure: female-centred, male-centred, nuclear and extended. A female-centred household has no husband/male partner and may include relatives, children and friends. A male-centred household has no wife/female partner and may include relatives, children and friends. Nuclear family households have a husband/male partner and wife/female partner with or without children. Extended households have a husband/male partner and wife/female partner, with or without children, and with other relatives and non-relatives. Nuclear family households are the most common household structure represented among the sampled households (55%), followed by male-centred (20%) and female-centred households (17%). Extended households are not very common (Figure 3).

**FIGURE 3: Household Structure**

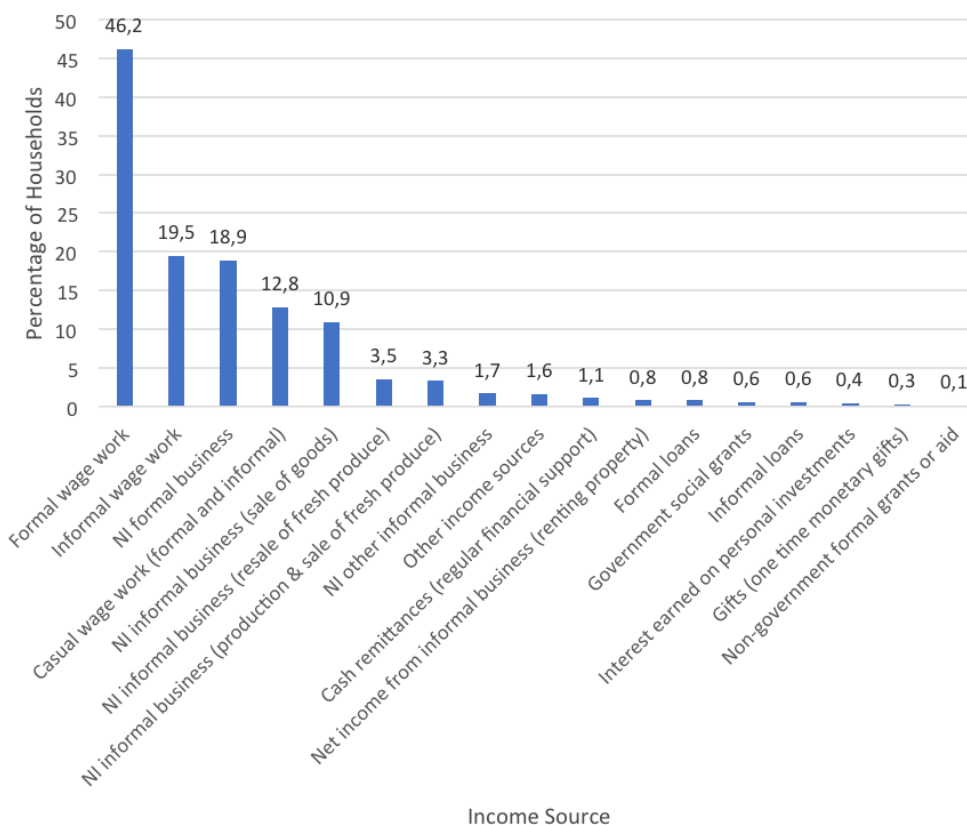




### 3.2. Economic Profile of Households

The dominant source of income among the surveyed households is formal wage work, although only 46% received income in this form (Figure 4). Other major sources of income for at least 10% of the households are informal wage work (20%), formal businesses (19%), formal and casual wage work (13%), and informal selling of goods (11%). Only a few households (less than 2%) receive income from grants, loans, gifts and cash remittances.

**FIGURE 4: Household Income Sources**



NI = net income

Questions related to income amounts are normally a sensitive issue in urban household surveys, and not only because it is common practice to keep one's income private but also because of fear that the information might be used for other purposes such as tax evasion probes or even with criminal intentions. For this research, rather than asking for total income amounts, a household's monthly income was calculated by adding up the amounts that interviewees said they had received from each separate income source in the previous month. As a result, the income data and calculations are a rough indication of households' income, and pertain only to those who disclosed their income (about half of the sampled households).

The average household monthly income (excluding loans) calculated using this method was KES83,623 (USD820).<sup>1</sup> The monthly income range is from a minimum of zero to a maximum of KES20 million (USD196,078), with a median of KES25,000 (USD245). The range of income in each of the five income quintiles is presented in Table 3.

**TABLE 3: Household Income Quintiles**

| Income quintile | Range (KES)   |
|-----------------|---------------|
| 1               | <= 10,000     |
| 2               | 10,001–19,000 |
| 3               | 19,001–34,000 |
| 4               | 34,001–75,000 |
| 5               | 75,001+       |

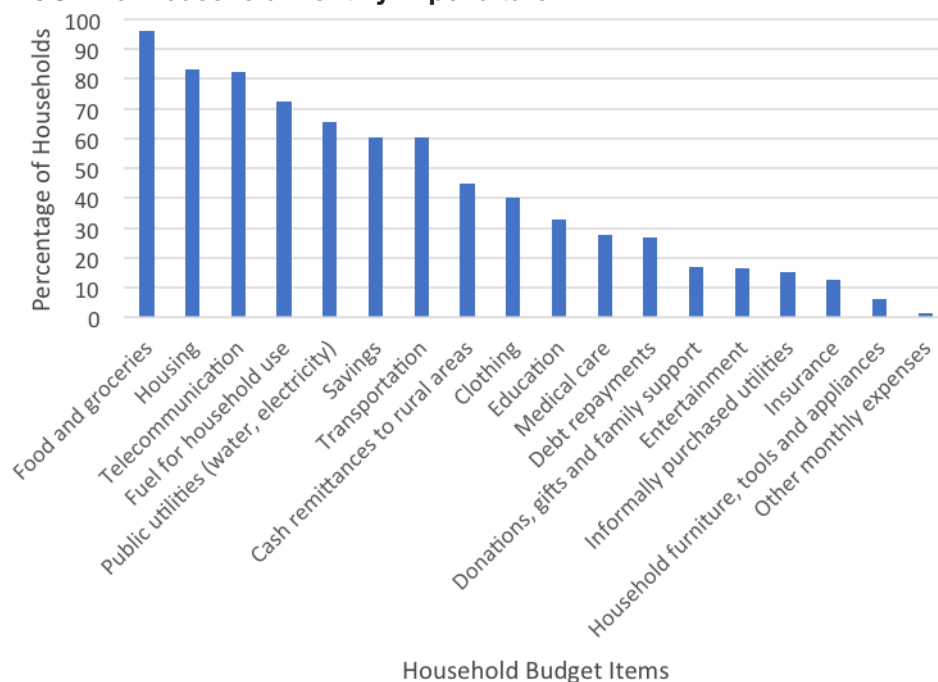
Table 4 gives a summary of the average income by income source. Formal business income was highest on average at just over KES200,000 (USD1,961) per month. Next was income from the informal business of selling goods (almost KES75,000 or USD735), followed by formal wages (KES68,000 or USD667), informal wages (KES21,000 or USD206) and casual wages (KES15,000 or USD147). Other income sources affected too few households to enable meaningful conclusions to be drawn.

**TABLE 4: Average Monthly Income by Source**

|   | No. of households | Mean (KES) | Mean (USD) |
|---|-------------------|------------|------------|
| Net income from formal business                   | 140               | 203,463    | 1,995      |
| Net income from informal business (sale of goods) | 91                | 74,547     | 731        |
| Formal wage work                                  | 370               | 67,881     | 666        |
| Casual wage work (formal and informal)            | 107               | 15,350     | 150        |
| Informal wage work                                | 171               | 21,170     | 208        |

*Note: Only income sources with >50 households listed*

Significantly more households were prepared to provide information on household expenditures. Figure 5 provides a list of expenditure items in the month prior to the survey. Almost all households (96%) incurred expenditures on food and groceries. Other common expenditure items included housing (83%) and telecommunication (82%). The use of mobile phones is ubiquitous across Kenyan households for communication and other transactions. Also frequently mentioned were expenditure on household cooking fuel (72%), public utilities (66%), savings (60%) and transportation (60%). It is important to note that as many as 45% of the households sent cash remittances to the rural areas, indicating strong urban–rural linkages.

**FIGURE 5: Household Monthly Expenditure**

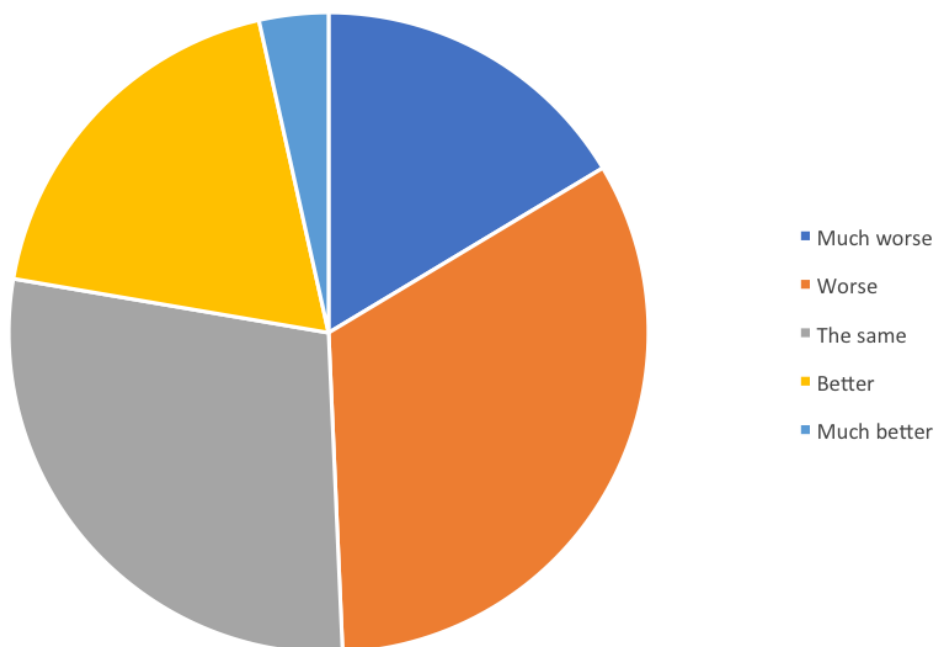
On average, the sampled households had spent about KES9,000 (USD88) on food and groceries. Other major expenses included KES16,000 (USD157) on household goods, KES13,000 (USD127) on education, KES11,000 (USD108) on housing, and KES10,000 (USD98) on debt repayment (Table 5).

**TABLE 5: Average Monthly Expenditures**

|  | No. of households | Mean (KES) | Mean (USD) |
|--|-------------------|------------|------------|
| Household furniture, tools and appliances              | 84                | 16,370     | 160        |
| Education  | 441               | 13,946     | 137        |
| Housing  | 1,159             | 11,384     | 112        |
| Debt repayments  | 356               | 10,079     | 99         |
| Food and groceries                                     | 1,253             | 9,352      | 92         |
| Insurance  | 140               | 8,787      | 86         |
| Savings  | 743               | 7,828      | 77         |
| Medical care   | 366               | 6,123      | 60         |
| Entertainment  | 219               | 5,657      | 55         |
| Transportation   | 807               | 4,626      | 45         |
| Donations, gifts and family support                    | 219               | 4,376      | 43         |
| Cash remittances to rural areas                        | 592               | 3,941      | 39         |
| Clothing   | 525               | 3,783      | 37         |
| Telecommunications                                     | 1,087             | 2,617      | 26         |
| Public utilities (water, electricity)                  | 918               | 2,259      | 22         |
| Fuel (firewood, charcoal, paraffin, kerosene, propane) | 998               | 1,617      | 16         |
| Informally purchased utilities (water, electricity)    | 206               | 1,287      | 13         |

To gain a sense of whether economic conditions were improving or deteriorating, respondents were asked to compare conditions at the time of the interview with economic conditions a year previously. Slightly less than half of the households noted that the present economic conditions were either worse (33%) or much worse (16%) (Figure 6). Only 22% said that economic conditions were better or much better, while 29% did not see any difference between the two periods.

**FIGURE 6: Present Household Economic Conditions**

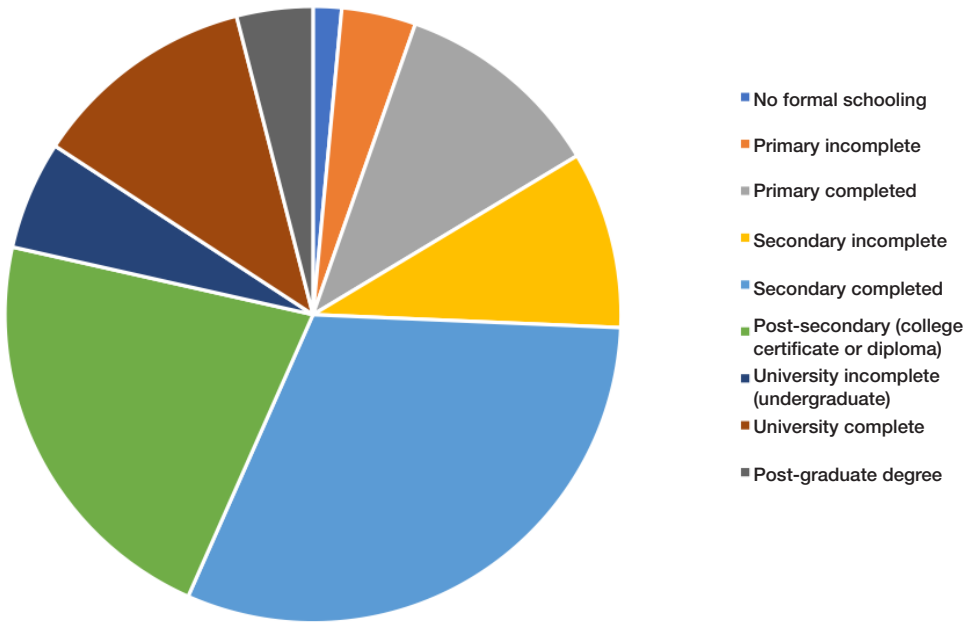


### 3.3. Occupational and Livelihoods Profile

The highest level of education attained by sampled household members aged 18 years and over (i.e. working-age adults) is presented in Figure 7. The proportion with no formal training is less than 2%, while the proportion with primary education is 15%. As many as 40% had attended secondary school (with 31% having completed school). Another 22% have a post-secondary college certificate or diploma, while 18% have some tertiary education (with 12% having an undergraduate degree and 4% a postgraduate degree).

Figure 8 presents the work status data for adult household members (aged 18 years and over). As many as 72% were engaged in some form of employment; whether full-time, part-time or self-employed. Around a third were self-employed (32%), 28% were in full-time employment and 11% were working in part-time casual, contract or seasonal jobs. Unemployment was relatively low with 7% unemployed and looking for work and 3% not looking for work.

**FIGURE 7: Highest Level of Education by Adult Household Members**



**FIGURE 8: Work Status of Adult Household Members**

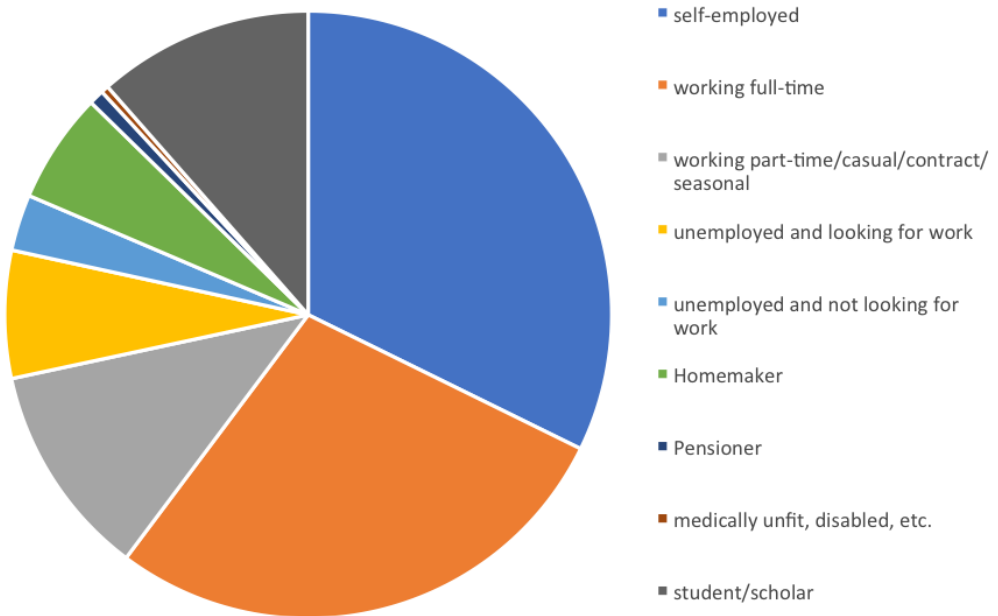
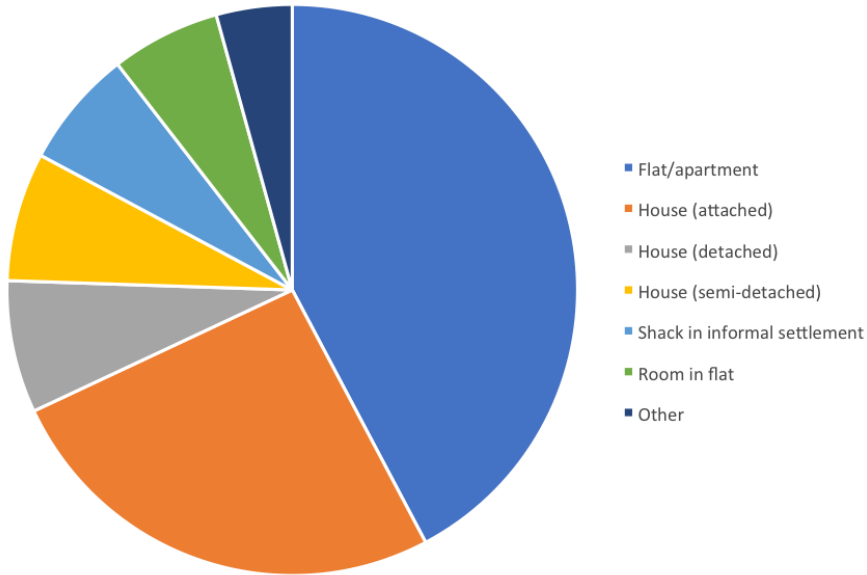


Figure 9 shows that the most common dwelling type occupied by the sampled households is flats/apartments (42%), followed by attached houses (26%). Residential flats are common in most low and middle-income residential neighbourhoods of Nairobi. The next most popular category of dwelling units is detached and semi-detached houses, mostly found in middle and high-income neighbourhoods.

**FIGURE 9: Household Dwelling Types**



**Flats/Apartments in Nairobi**  
 Source: Andrea Brown



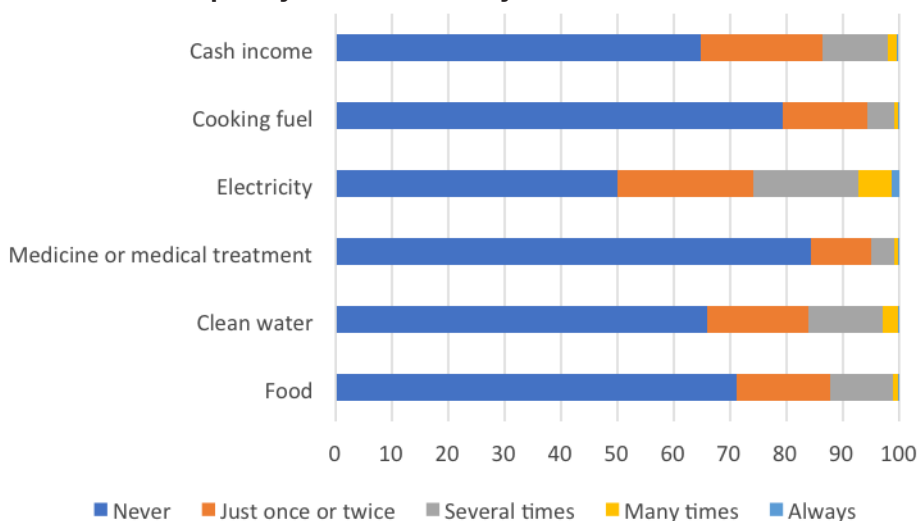
**Housing in Kibera Slum, Nairobi**

### 3.4. Poverty Profile

The Lived Poverty Index (LPI) provides a reliable subjective experiential index of “lived poverty” (Mattes 2008). It measures how often people report being unable to secure a basket of basic necessities of life, including food. It can also be used as a measure of deprivation. The lived poverty indicators are determined by asking whether, in the past year, any of the household members had experienced inconsistent access to food, clean water, medical care, electricity, cooking fuel and cash income (Figure 10).

A relatively high proportion of the sampled households reported that they never experienced inconsistent access to food (71%) or, if they did, it happened “just once or twice” (17%). However, a total of 12% of the households had experienced lack of food several times, many times or always. The same trend of a higher proportion of households who never went without was seen with respect to access to medical care (84%), access to cooking fuel (80%), access to clean water (66%), access to electricity (50%) and access to a cash income (65%) (Figure 10).

**FIGURE 10: Frequency of Inaccessibility to Basic Needs in the Past Year**



The LPI scores range along a scale from 0 to 4. A mean score closer to 0 indicates fewer households “going without” and a score closer to 4 indicates more households “going without”. The higher the score, the greater the household experience of poverty. The Nairobi LPI scores range from a minimum of 0 to a maximum of 3.17, with a median of 0.33. The mean LPI score for the sampled households was 0.46 – confirmation of the fact that many households never experienced inconsistent access to basic household items.



## 4. FOOD INSECURITY

### 4.1 Measures of Food Insecurity

Household food insecurity is multi-dimensional and highly contextual. The HCP survey focuses on household experiences of food deprivation, constrained access, and dietary choices to develop a picture of the food security situation in each of the cities it is researching. HCP uses the food security assessment methodology developed by the Food and Nutrition Technical Assistance (FANTA) project (Coates et al. 2007). FANTA conducted a series of studies exploring and testing alternative measures of household food insecurity in a variety of geographical and cultural contexts and developed various widely-used indicators and scales to measure aspects of food insecurity. There are four main metrics:

- **Household Food Insecurity Access Scale (HFIAS):** The HFIAS score is a continuous measure of the degree of food insecurity (access) in the household (Coates et al 2007). An HFIAS score is calculated for each household based on answers to nine frequency-of-occurrence questions designed to capture different components of the household experience of food insecurity in the previous four weeks. The minimum score is 0 and the maximum is 27. The higher the score, the more food insecurity the household experienced. The lower the score, the less food insecurity the household experienced.
- **Household Food Insecurity Access Prevalence (HFIAP) indicator:** The HFIAP indicator is based on the HFIAS and uses a scoring algorithm to categorize households into four levels of household food insecurity: food secure, mildly food insecure, moderately food insecure, and severely food insecure (Coates et al 2007). Households are categorized as increasingly food insecure as they respond affirmatively to more severe conditions and/or experience those conditions more frequently.
- **Household Dietary Diversity Score (HDDS):** Dietary diversity refers to how many food groups are consumed within the household in the previous 24 hours (Swindale and Bilinsky 2005). The scale runs from 0 to 12 and a score is calculated for each household. An increase in the average number of different food groups consumed provides a quantifiable measure of improved household dietary diversity.
- **Months of Adequate Household Food Provisioning (MAHFP) indicator:** The MAHFP indicator captures changes in the household's ability to ensure that food is available above a minimum level the year round (Bilinsky and Swindale 2010). Households are asked to identify in which months (during the past 12 months) they did not have access to sufficient food to meet their household needs.

## 4.2. Household Food Access

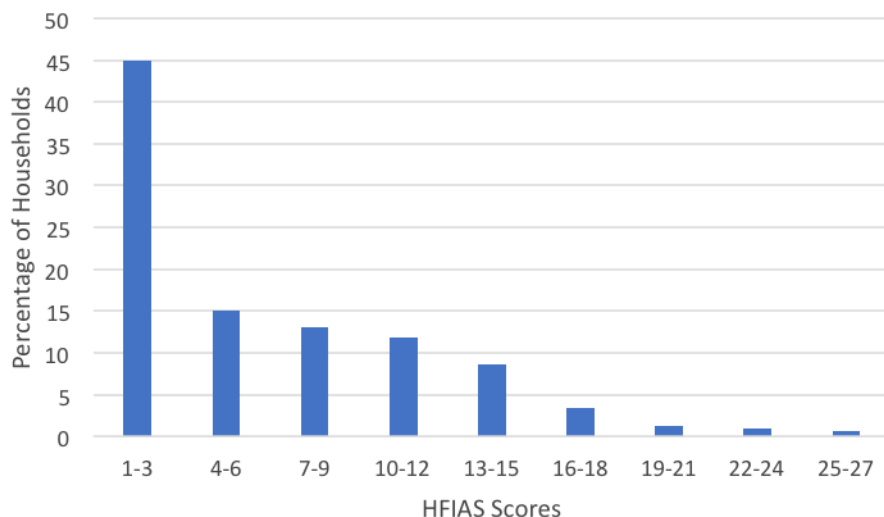
Figure 11 presents the frequency of occurrence of the households’ food insecurity conditions from the nine HFIAS questions. Generally, a greater proportion of the sampled households in Nairobi said that they did not or rarely experienced most of the conditions. Highest percentages of no and rare occurrences (90% and above) were experienced in relation to “having no food to eat” because of lack of resources, “going to sleep hungry”, and “going a whole day and night without eating” because there was not enough food.

However, a number of households experienced all the food insecurity conditions, though in varying proportions. For example, about three-quarters of the households reported that they sometimes or often experienced the inability to eat preferred foods, were eating a limited variety of foods, or were eating foods they do not want to eat because of lack of resources. About one-quarter of the households sometimes or often experienced worrying about not having enough food, eating a smaller meal, and eating fewer meals in a day because there was not enough food.

**FIGURE 11: Responses to HFIAS Food Access Questions**



Data from these frequency-of-occurrence questions were used to derive a Household Food Insecurity Access Scale (HFIAS) score for each household to determine the degree of food insecurity. The higher the score, from 0 to 27, the more food insecurity the household experienced. The lower the score, the less food insecurity experienced. About three-quarters (73%) of the sampled households in Nairobi had HFIAS scores of between 1 and 9. About one-quarter (24%) had scores between 10 and 18, while the rest (3%) had very high HFIAS scores between 19 and 27 (Figure 12).

**FIGURE 12: Household HFIAS Scores**

Using the categorization of the Household Food Insecurity Access Prevalence (HFIAP) indicator, nearly one-third (29%) of the sampled households can be categorized as food secure, while another 13% were mildly food insecure (Figure 13). These two categories combined therefore account for 42% of the households. On the other hand, one-third of the households were moderately food insecure and one-quarter (25%) were severely food insecure. Combining these categories, more than half (58%) of the households experience food insecurity.

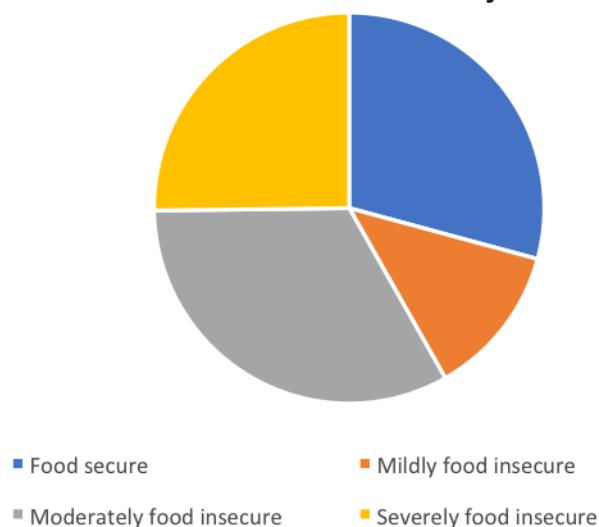
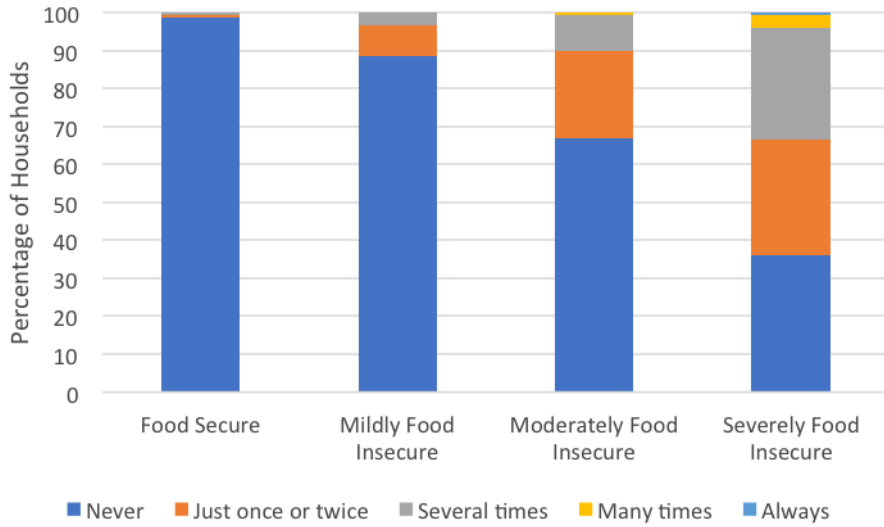
**FIGURE 13: Household Food Insecurity Prevalence**

Figure 14 shows that moderately and severely food insecure households are more likely to go without food more frequently than their counterparts in food secure or mildly food insecure households. Almost all of the food secure households never experience inconsistent access to food.

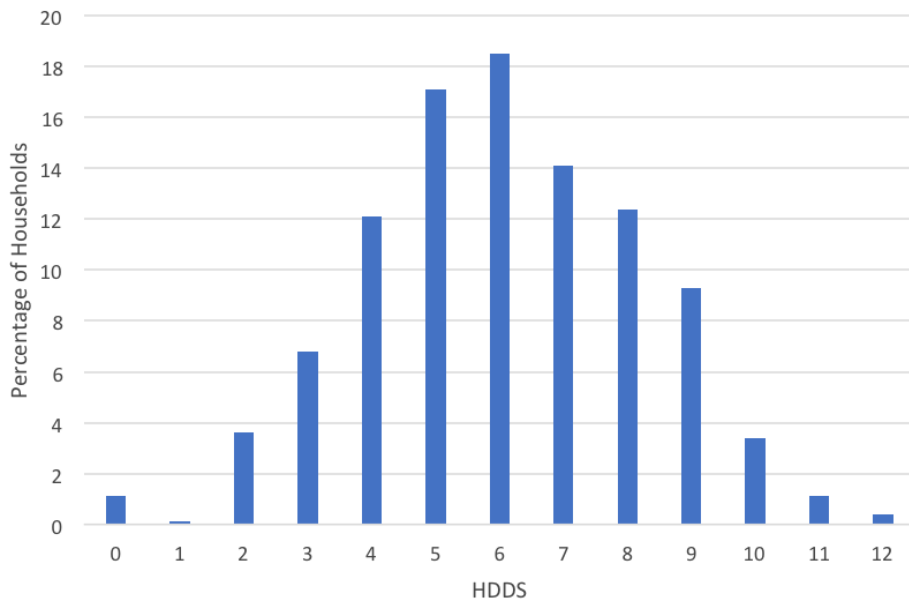
**FIGURE 14: Consistency of Food Access by Food Security Status**



### 4.3 Household Dietary Diversity

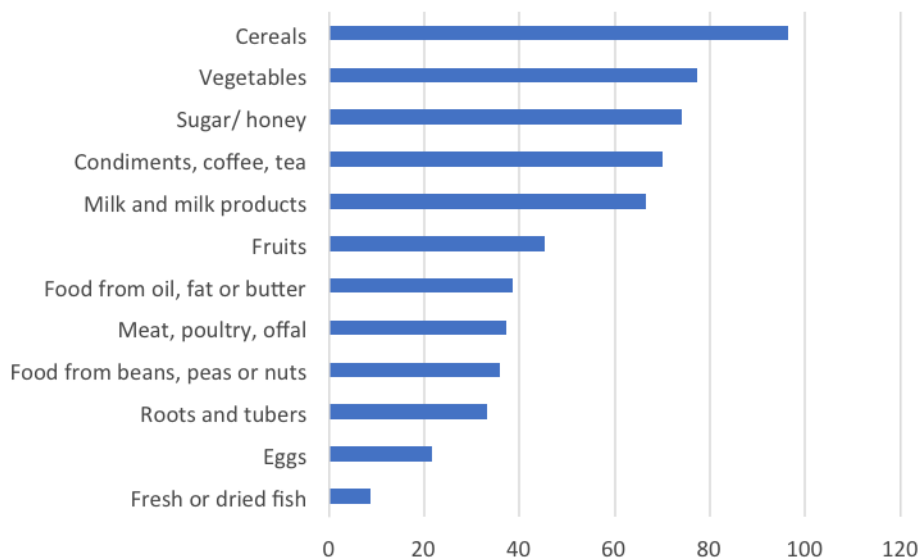
The mean number of different food groups consumed by the households in the previous 24 hours was 6.0 – an indication of a reasonable dietary diversity (Figure 15). The distribution of the number of different food groups consumed by the households depicts a normal curve with fewer but still a significant number of households with low and high dietary diversity respectively. Twelve percent of the households had a HDDS score of below 4 and therefore lack the diversity in diet considered to be a pre-condition for good health.

**FIGURE 15: Household Dietary Diversity Scores**



The most common food group consumed by almost all the households (96%) in the previous 24 hours was cereals (ugali [food prepared with maize meal], bread, rice or other foods made from grains) (Figure 16). This is largely because ugali, rice or other foods made from grains are a staple diet for most communities in Kenya. The other common food groups consumed by more than half of the households included vegetables (77%), sugar or honey (74%), condiments, coffee or tea (70%), and milk or milk products (67%). These food groups are typical of the average urban Kenyan's daily diet. Food groups such as fruit, meat, beans, roots and tubers, eggs and fish are consumed by a relatively small number of households due to their relatively high market prices. Furthermore, these are food groups that are not consumed on a daily basis, especially by relatively poor households, because their consumption depends on affordability and the household's purchasing power.

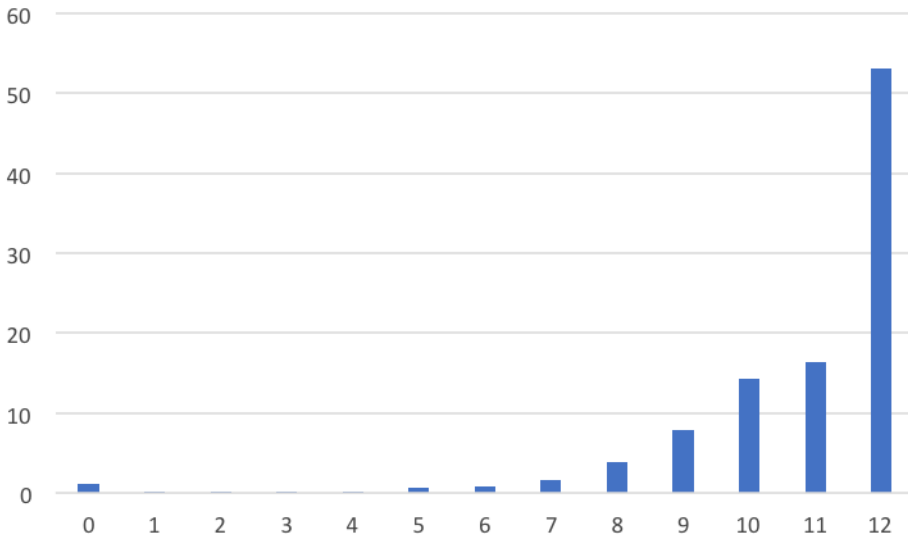
**FIGURE 16: Food Groups Consumed in the Previous 24 Hours**



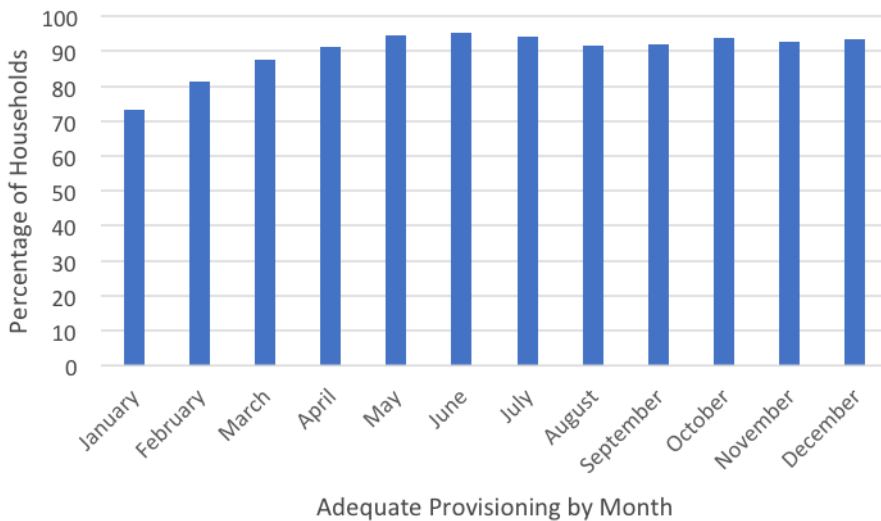
#### 4.4. Food Stability

The respondents were asked to identify the months during the past year in which their households did not have access to sufficient food to meet their needs. About half (49%) reported that there were some months in the preceding 12 months when their households did not have enough to eat. The MAHFP indicator found that the overall average months of adequate household food provisioning was 10.8 (Figure 17). More than half of the households (53%) had 12 months of adequate food provisioning, while 44% had between 7 and 11 months. Generally, the months with the most inadequate food provisioning were January, February and March (Figure 18). These months include the aftermath of the festive period (Christmas holidays) and associated increased expenditure, as well as the period of returning to school with fee payments due.

**FIGURE 17: MAHFP Scores**

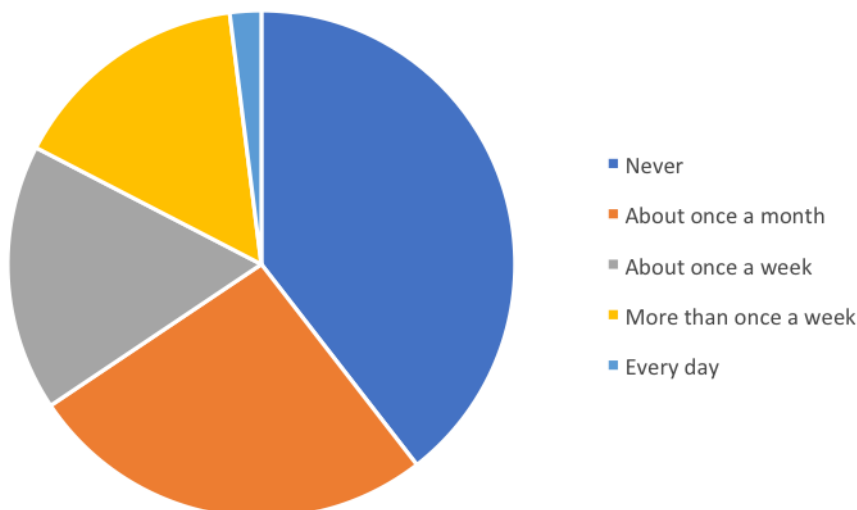


**FIGURE 18: Months with Adequate Household Food Provisioning**

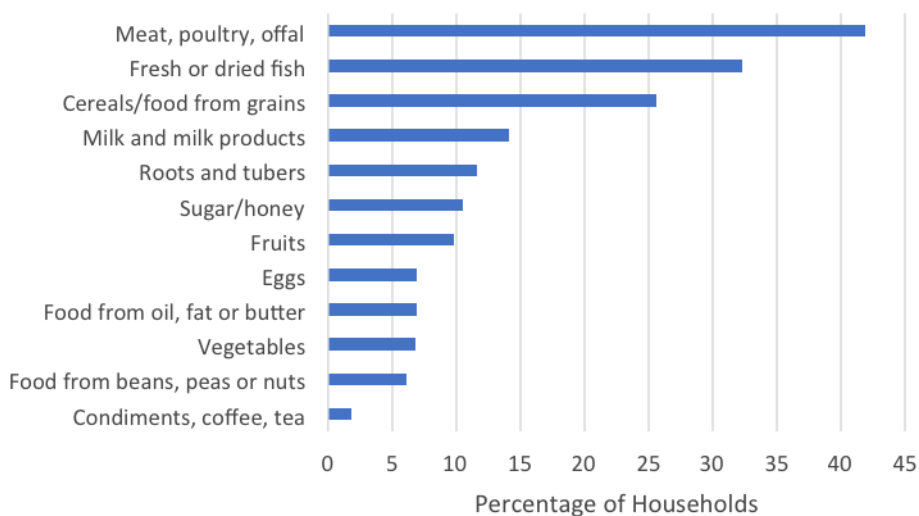


### 4.5 Food Prices as a Barrier to Access

Respondents were asked to indicate if any member of the household had, over the past six months, gone without certain types of food because of unaffordably high food prices. About one-third of the households (34%) said that they had been affected by food prices at least once a week (Figure 19). Another one-quarter of households were affected once a month. In total, about 60% of the sampled households were affected; that is, they went without certain food types because they could not afford them. Even then, about 40% of the households reported that their food access was unaffected by high food prices.

**FIGURE 19: Frequency of Going Without Food Due to Food Prices**

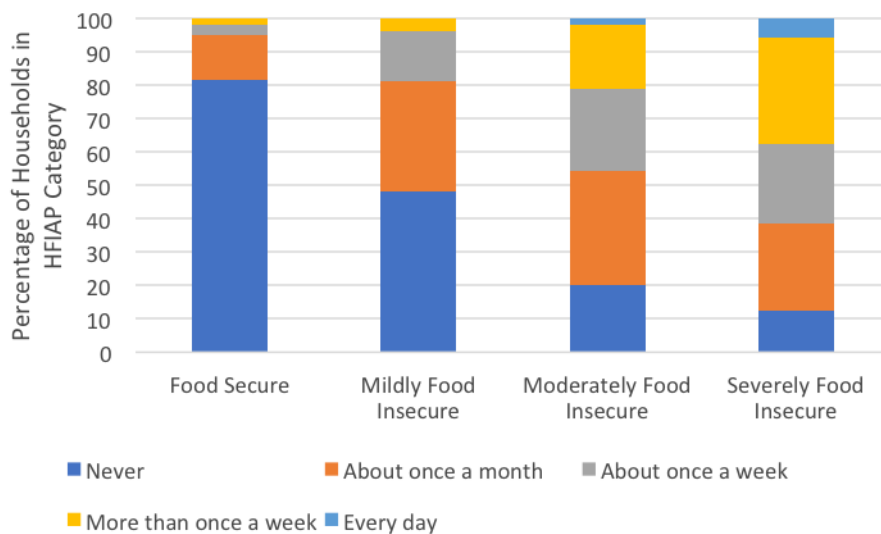
Meat and poultry is top of the list of unaffordable food types, mentioned by just over 40% of the price-increase-affected households (Figure 20). This is followed by fresh or dried fish and cereals. It is perhaps not surprising that meat, poultry and fish are unaffordable for many households. However, cereals are the most common food group consumed by almost all households and were identified as unaffordable by as many as one in four households.

**FIGURE 20: Food Types Identified as Unaffordable**



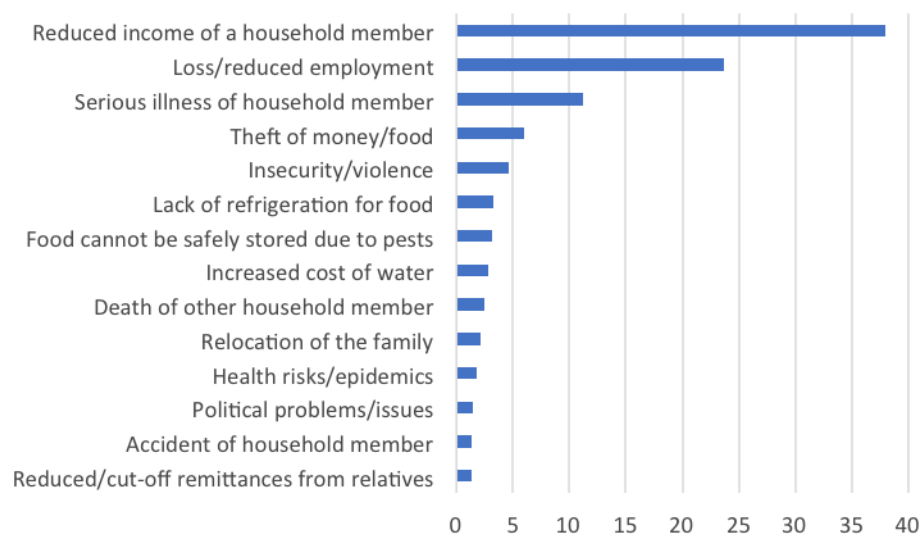
Moderately and severely food insecure households have a higher likelihood of going without food due to unaffordability. Notably, 62% of severely food insecure and 46% of moderately food insecure households went without food at least once a week due to price increases (Figure 21). On the other hand, eight out of every 10 food secure households never experienced any food shortages. In other words, the proportion of households going without food because of unaffordability increases with the severity of food insecurity. This undoubtedly compounds their already precarious situation.

**FIGURE 21: Food Insecurity and Frequency of Going Without Due to Food Prices**



## 4.6 Food Hazards

Households experience several problems that prevent them from having enough food to meet their needs. Figure 22 shows the number of households affected by food hazards. In Nairobi, income-related problems are foremost. Nearly 40% of the sampled households were affected by reduced income and a quarter (24%) by the loss of or reduced employment in the six months prior to the survey. Serious illness of a household member had affected 11% of households, while theft of money or food had impacted on 6%.

**FIGURE 22: Hazards Impacting on Food Access**

## 5. FOOD SECURITY STATUS AND HOUSEHOLD CHARACTERISTICS

Food security scores can be cross-tabulated with household characteristics to gain insight into the factors that are correlated with household food insecurity. This section examines food security scores in relation to household income, household structure, and LPI scores.

### 5.1. Income and Food Security

The relationship between various food insecurity scores (HDDS, HFIAS and MAHFP) and household income quintiles is presented in Table 6. The cross-tabulation clearly shows that the poorer the household, the lower (worse) the mean HDDS scores, the higher (worse) the mean HFIAS scores, and the lower (worse) the mean MAHFP scores. Households in the lowest income quintile have a mean HDDS of 5.19, a mean HFIAS of 9.89 and a mean MAHFP of 9.74, compared to households in the highest income quintile with means of 7.37, 2.06 and 11.71 respectively.

**TABLE 6: Food Security Scores and Household Income**

| Income quintiles | Mean HDDS | Mean HFIAS | Mean MAHFP |
|------------------|-----------|------------|------------|
| 1                | 5.19      | 9.89       | 9.74       |
| 2                | 5.70      | 7.94       | 10.41      |
| 3                | 6.10      | 6.65       | 10.48      |
| 4                | 6.42      | 4.36       | 10.91      |
| 5                | 7.37      | 2.06       | 11.71      |

## 5.2. Household Structure and Food Security

Female-centred households have the lowest (worst) mean HDDS score compared to the other types of household. They also have the highest (worst) HFIAS and lowest (worst) MAHFP. Nuclear families score best on the HDDS, indicating greatest dietary diversity, and have the lowest HFIAS, indicating the best overall levels of food security (Table 7).

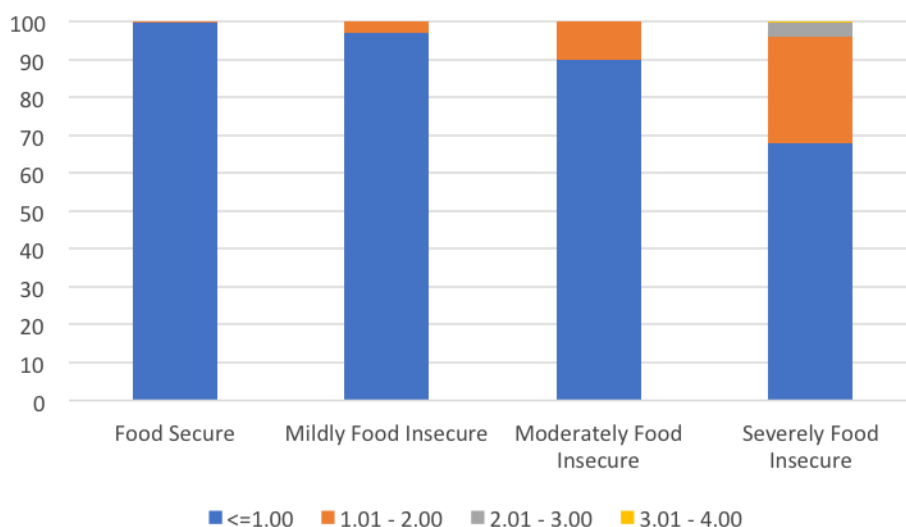
**TABLE 7: Food Security Scores and Household Structure**

| Household structure | Mean HDDS | Mean HFIAS | Mean MAHFP |
|---------------------|-----------|------------|------------|
| Female-centred      | 5.81      | 6.85       | 10.60      |
| Male-centred        | 5.87      | 5.71       | 10.75      |
| Nuclear             | 6.22      | 5.61       | 10.84      |
| Extended            | 6.09      | 6.10       | 10.92      |
| Total               | 6.08      | 5.87       | 10.79      |

## 5.3. Lived Poverty and Food Security

When the household LPI score is cross-tabulated with the four HFIAP categories, a connection between lived poverty and food insecurity clearly emerges. Almost all food secure and mildly food insecure households experienced very low LPI scores of less than one (Figure 23). Among moderately food insecure households, 10.0% were in the 1.01-2.00 range. All households with LPI scores greater than 2.01 were also severely food insecure.

**FIGURE 23: Lived Poverty Index Categories by HFIAP**

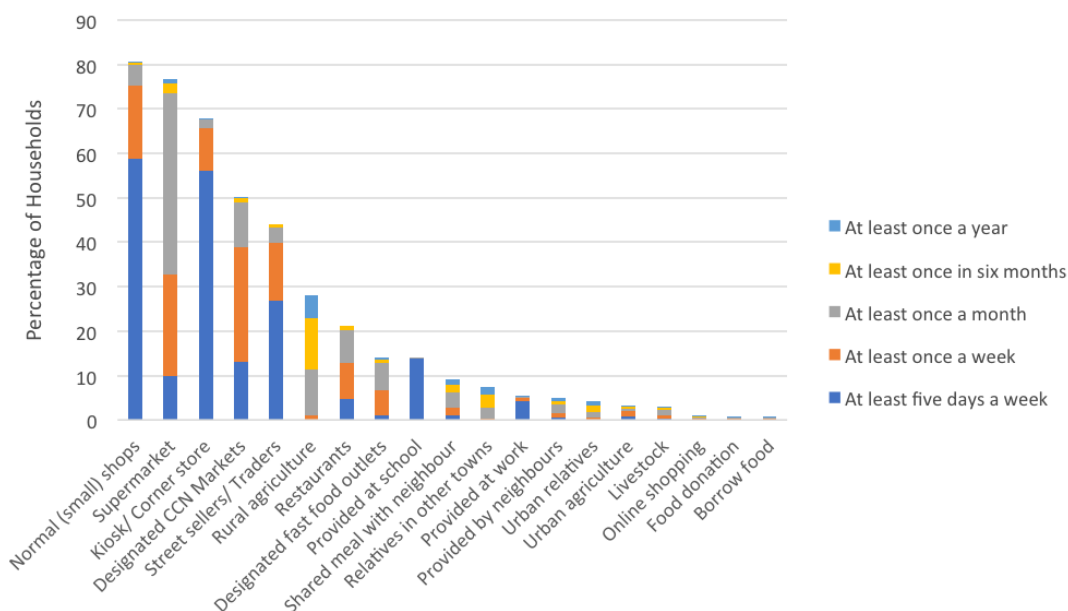


## 6. FOOD SOURCING

### 6.1. Food Sources

The sampled households in Nairobi have a wide range of food sources. The most commonly patronized food sources are small shops, including grocers, (82% of households), supermarkets (79%) and kiosks (69%) (Figure 24). More often than not, the small shops and kiosks are convenience stores located within neighbourhoods. There are many of these outlets, located in both designated and undesignated areas, and they sell fast-moving lower-order goods needed on a daily basis by the neighbourhood residents. Examples of stock include milk, bread, sugar and maize meal. More than 70% of the households use these small shops and kiosks on an almost daily basis (at least five days a week).

**FIGURE 24: Household Food Sources by Frequency of Patronage**



Supermarkets are growing rapidly in importance as a source of food in both the wealthier and poorer neighbourhoods of Nairobi. Supermarket chains are opening branches in almost all areas of the city (Owuor et al 2017). The survey found that most are frequented by households on a monthly basis for bulk shopping (Figure 24). It is common to find long queues with people doing bulk shopping in supermarkets during the last or the first weekend of the month, soon after salaries have been paid.

The next group of food sources are the designated Nairobi City County markets and street sellers, including traders. They are patronized by 51% and 45% of the sampled households respectively (Figure 24). The local authority has designated enclosed and open-air markets across the city. These markets are mainly frequented at least once a week, largely for fresh food products.

The informal food economy (street sellers and traders) is growing in importance and is frequented on an almost daily basis by 61% of the households. Consumers believe that the informal food economy offers a wide range of products at a cheaper price than in the formal food outlets. However, the choice of formal or informal food sources depends on the household's perceptions of a range of factors including affordability, variety, flexibility, proximity, convenience, credit facilities, health risks, freshness and quality.

Non-market sources of food proved to be far less important than expected. For example, only 29% of households depend on rural agriculture and even fewer on urban agriculture and livestock keeping (both around 3%) as a source of food. Likewise, eating from restaurants and fast-food outlets is not very common. Other sources of food for a minority of households and their members include meals at school (14%) and the workplace (5%), and various forms of social interaction such as sharing a meal with neighbours, obtaining food from friends and relatives, food donations and borrowing.



Formal Food Market in Nairobi

Source: <http://www.monitor.co.ke/2015/04/29/terror-attack-nairobis-wakulima-market-foiled/>





Corner Store in Nairobi  
Source: Andrea Brown



Restaurant in Nairobi  
Source: Andrea Brown



Street-Seller Stall in Nairobi

Source: Andrea Brown

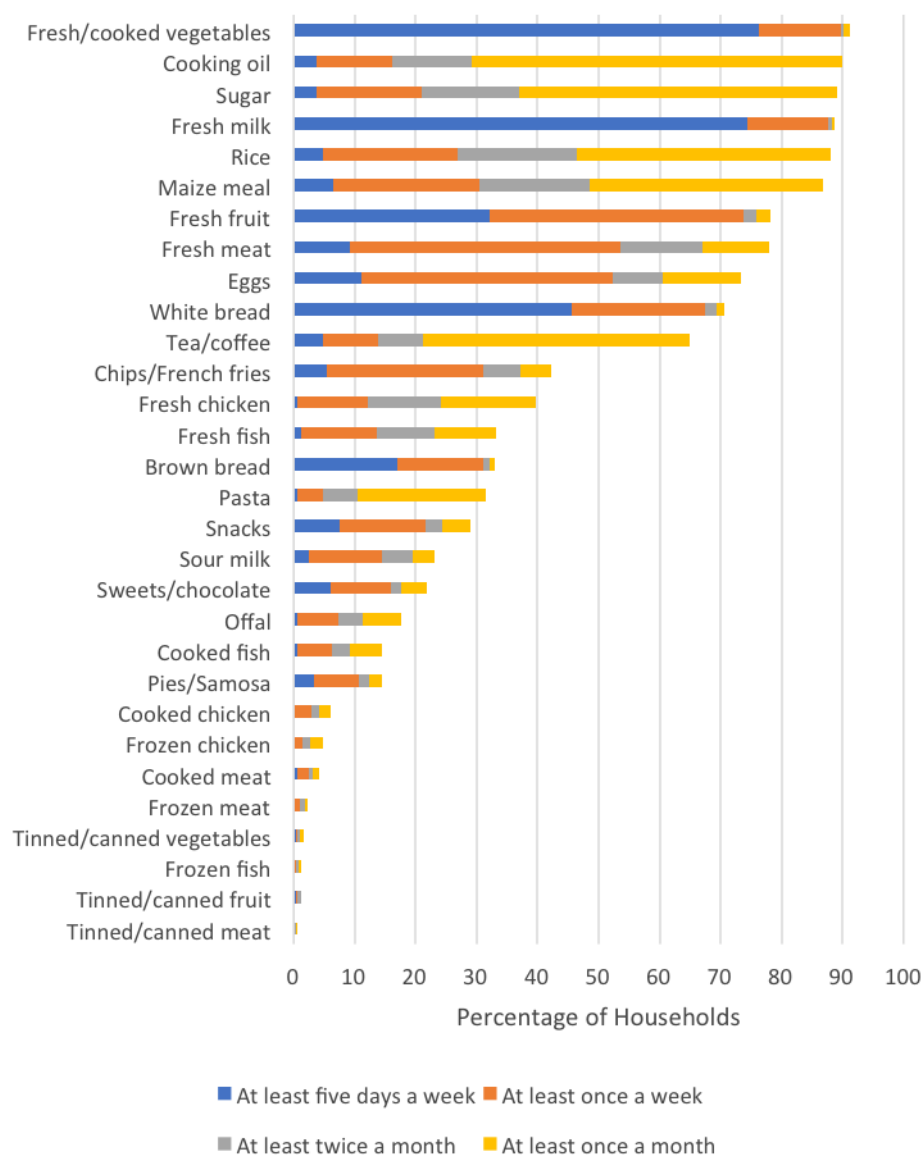
## 6.2. Food Purchasing Behaviour

Household members engage in food-related responsibilities in the household to varying degrees depending on the relationship to the household head and type of responsibility (Table 8). Household heads and, to a lesser extent, spouses/partners take responsibility for the purchase of food. However, household heads are only half as likely as spouses/partners to be involved in food preparation. Children and other kin are also more likely to be involved in food preparation.

The Hungry Cities Food Purchases Matrix (HCFPM) allows us to determine which kinds of foods are purchased at which outlets, as well as how many households purchase a particular food item (Crush and McCordic 2017). The most frequently purchased food types in the month prior to the survey were maize meal, white bread, rice, fresh vegetables, fresh fruit, fresh meat, eggs, fresh milk, sugar and cooking oil. Each was purchased by over three-quarters of the sampled households (Figure 25). White bread, fresh vegetables and fresh milk tend to be purchased almost daily. Eggs and fresh fruit tend to be purchased once a week and fresh meat twice a month. Maize meal, rice, sugar and cooking oil tend to be purchased once a month. While expensive food items such as meat, chicken and fish are not popular in many households, they are still purchased at least once a week, twice a month or at least once a month.

**TABLE 8: Food-Related Responsibilities of Household Members**

|                   | Buying food | Preparing food | Deciding who will get food | Growing food | Does none of these |
|-------------------|-------------|----------------|----------------------------|--------------|--------------------|
| Head of household | 93.2        | 47.4           | 9.8                        | 2.8          | 5.2                |
| Spouse/partner    | 73.4        | 94.1           | 19.1                       | 3.4          | 1.0                |
| Son/daughter      | 7.3         | 33.8           | 0.9                        | 0.6          | 63.4               |
| Brother/sister    | 50.0        | 82.4           | 7.2                        | 1.4          | 12.2               |
| Other relative    | 17.4        | 48.1           | 2.7                        | 1.9          | 49.2               |
| Non-relative      | 35.1        | 87.0           | 6.9                        | 1.5          | 9.2                |

**FIGURE 25: Major Household Food Purchases by Frequency of Purchase**



For each food item purchased, the HCFPM records where the household normally obtains the item from a list of 10 types of retail outlets (Table 9). The columns in Table 9 for informal markets, kiosks and street traders represent the informal sector in the city. Each cell in Table 9 reflects the proportion of households that normally purchase a given food item from a given food source. Households are permitted to choose more than one source per food item. For example, 63% of households normally purchase their maize meal at a supermarket, 27% at a small shop and 14% at a kiosk. The shaded cells in Table 9 represent cases where more than half of the households normally purchase the item from a given source. This helps to draw attention to the exceptionally strong associations between some food items and their main sources. So, for example, supermarkets emerge from this analysis as a key source for foods including maize meal, rice, pasta, tinned foods, frozen foods, tea, coffee, sugar and confectionary. Supermarkets are much less popular for the purchase of fresh fruits and vegetables, which are obtained from a variety of other formal and informal sources. Small shops stand out as the main source for white bread, although a third of households also purchase this item at supermarkets and kiosks. Most households obtain their meat and offal from butcheries. Formal markets are popular for fresh vegetables, fruits and fish, while informal markets are popular for fresh vegetables, fruits, chicken and fish. Street traders are popular for fresh vegetables, fruits and fish, as well as chips (French fries). However, take-aways and restaurants are more important sources for chips.

**TABLE 9: Household Food Purchases by Food Source**

| Food items                       | Super-market | Small shop | Butch-ery/<br>bakery | Take-away | Res-taurant | Formal market | Infor-mal market | Kiosk | Whole-sale | Street trader |
|----------------------------------|--------------|------------|----------------------|-----------|-------------|---------------|------------------|-------|------------|---------------|
| Maize meal                       | 62.8         | 27.3       |                      |           | 0.1         | 2.0           | 2.9              | 13.7  | 9.0        | 0.6           |
| White bread                      | 32.2         | 54.8       | 0.3                  |           | 0.1         | 0.1           |                  | 34.3  | 0.4        | 0.5           |
| Brown bread                      | 45.8         | 41.4       | 1.1                  |           |             |               | 0.2              | 30.7  | 0.4        | 0.4           |
| Rice                             | 58.3         | 25.2       | 0.8                  |           | 0.2         | 3.9           | 4.0              | 11.9  | 9.3        | 1.0           |
| Pasta                            | 82.9         | 11.2       |                      |           |             | 0.2           |                  | 5.0   | 5.0        | 0.4           |
| Fresh/<br>cooked vegeta-<br>bles | 6.7          | 39.4       |                      | 0.1       | 0.5         | 20.2          | 13.9             | 29.2  |            | 25.3          |
| Fresh fruit                      | 8.6          | 39.4       | 0.1                  |           | 0.1         | 21.4          | 12.2             | 23.5  | 0.1        | 26.2          |
| Canned vegeta-<br>bles           | 84.0         | 8.0        | 0                    |           |             | 12            | 8.0              | 4     |            |               |
| Canned fruit                     | 100.0        | 6.3        | 0                    |           |             |               |                  |       |            |               |
| Fresh meat                       | 4.6          | 1.2        | 92.6                 | 0.2       | 0.4         | 4.8           | 0.8              | 0.4   | 0.4        | 0.2           |

|                    |       |      |      |      |      |      |      |      |     |      |
|--------------------|-------|------|------|------|------|------|------|------|-----|------|
| Frozen meat        | 73.5  |      | 35.3 | 2.9  |      | 2.9  |      |      | 2.9 | 2.9  |
| Cooked meat        | 6.5   | 1.6  | 30.6 | 11.3 | 59.7 | 11.3 | 6.5  | 1.6  |     |      |
| Offal              |       | 0.4  | 83.7 | 0.4  | 5.1  | 8.9  | 3.1  | 0.8  | 0.4 |      |
| Tinned meat        | 100.0 |      |      |      |      |      |      |      |     |      |
| Frozen chicken     | 47.1  | 5.9  | 36.8 | 1.5  | 4.4  | 2.9  | 4.4  |      | 1.5 | 1.5  |
| Fresh chicken      | 17.2  | 4.0  | 47.1 | 1.6  | 3.5  | 15.5 | 19.7 | 1.2  | 1.4 | 7.7  |
| Cooked chicken     | 10.2  | 2.3  | 11.4 | 30.7 | 6.8  | 4.5  | 1.1  | 3.4  |     | 4.5  |
| Fresh fish         | 11.0  | 5.6  | 8.5  | 1.2  | 0.2  | 22.2 | 29.7 | 3.7  | 1.5 | 31.5 |
| Frozen fish        | 56.3  | 6.3  |      |      |      | 25   | 6.3  | 6.3  |     | 6.3  |
| Cooked fish        | 3.3   | 7.1  | 3.8  | 9.5  | 9.5  | 19.4 | 19.9 | 7.1  |     | 44.1 |
| Pies/samosa        | 16.3  | 11.1 | 2.9  | 23.6 | 26.9 | 1.4  | 2.4  | 7.2  |     | 36.5 |
| Eggs               | 16.3  | 54.5 | 0.3  |      | 0.4  | 1.8  | 2.8  | 35.1 | 4.5 | 4.9  |
| Fresh milk         | 30.0  | 52.7 | 0.1  | 0.3  | 0.2  | 0.3  | 0.8  | 38.6 | 1.3 | 1.6  |
| Sour milk          | 51.8  | 40.6 |      |      |      | 0.3  | 0.3  | 23.2 | 0.9 | 1.8  |
| Tea/coffee         | 61.4  | 25.1 |      | 0.3  | 1.7  | 0.4  | 0.7  | 17.6 | 4.3 | 1.2  |
| Sugar              | 66.8  | 25.4 |      |      | 0.1  | 0.6  | 0.2  | 13.1 | 6.1 |      |
| Cooking oil        | 67.2  | 22.8 |      |      |      | 1.1  | 0.5  | 12.5 | 6.6 | 0.5  |
| Snacks             | 68.2  | 38.0 | 0.2  | 1.2  | 0.5  |      | 0.2  | 19.4 | 0.7 | 2.9  |
| Sweets/chocolate   | 57.9  | 43.1 |      |      |      |      |      | 28.0 | 0.9 | 2.2  |
| Chips/French fries | 3.9   | 13.0 |      | 50.8 | 37.9 | 0.7  | 1.5  | 6.7  |     | 18.7 |

For each food item, the HCFPM ascertains the geographical location where it is normally purchased. The aim here is to provide insights into the geographical accessibility of each food (Table 10). All the food items in Nairobi are largely purchased within the neighbourhood in walking distance. This is emphasized by the shading of cells with over 50% of households purchasing an item in a particular geographical location (Table 10). By implication, all the major food sources are located in the residential neighbourhoods. However, some households purchase food on the road to and from work, from the Central Business District and from other shopping areas.

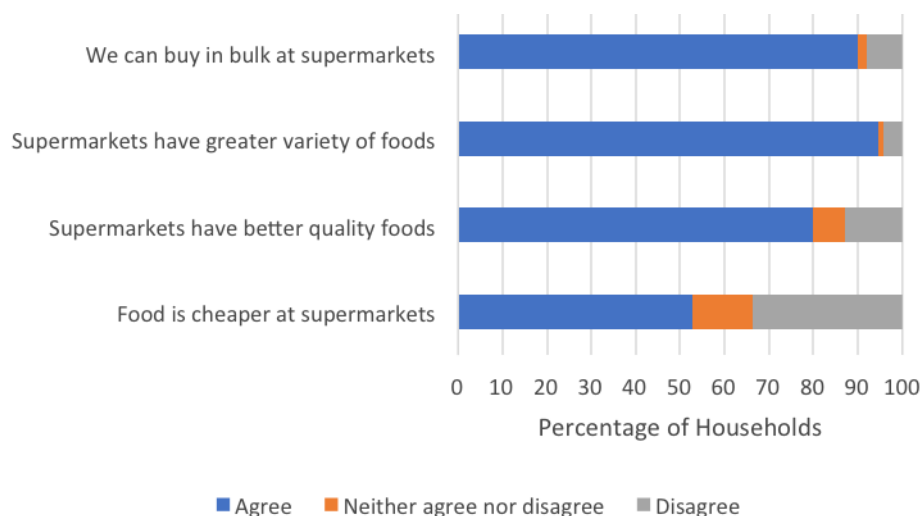
**TABLE 10: Household Food Purchases by Location of Food Source**

| Food items              | Within neighbourhood in walking distance | On road to or from work | Central Business District | Other shopping area | Outside the city | Other |
|-------------------------|--|-------------------------|---------------------------|---------------------|------------------|-------|
| Maize meal              | 89.0                                     | 7.5                     | 8.0                       | 2.1                 | 0.9              | 0.6   |
| White bread             | 95.8                                     | 5.6                     | 5.0                       | 0.4                 | 0.1              | 0.5   |
| Brown bread             | 93.5                                     | 6.3                     | 6.1                       | 0.4                 |                  | 0.6   |
| Rice                    | 87.3                                     | 7.2                     | 7.9                       | 2.6                 | 1.6              | 0.7   |
| Pasta                   | 87.7                                     | 6.1                     | 8.3                       | 2.4                 |                  | 0.9   |
| Fresh/cooked vegetables | 93.9                                     | 6.2                     | 4.0                       | 2.9                 | 0.2              | 0.9   |
| Fresh fruit             | 92.7                                     | 8.6                     | 4.4                       | 3.5                 | 0.7              | 1.0   |
| Canned vegetables       | 80.0                                     | 8.0                     | 16.0                      |                     |                  |       |
| Canned fruit            | 81.3                                     | 6.3                     | 25.0                      |                     |                  |       |
| Fresh meat              | 94.1                                     | 5.3                     | 2.7                       | 2.1                 | 0.5              | 0.8   |
| Frozen meat             | 82.4                                     | 14.7                    | 17.6                      | 2.9                 |                  | 5.9   |
| Cooked meat             | 82.3                                     | 14.5                    | 8.1                       | 4.8                 | 1.6              | 1.6   |
| Offal                   | 87.2                                     | 6.6                     | 3.5                       | 4.7                 | 0.4              | 0.4   |
| Tinned meat             | 66.7                                     |                         | 44.4                      |                     |                  |       |
| Frozen chicken          | 86.8                                     | 5.9                     | 11.8                      |                     |                  | 2.9   |
| Fresh chicken           | 84.0                                     | 7.3                     | 9.0                       | 3.5                 | 2.8              | 1.7   |
| Cooked chicken          | 75.0                                     | 14.8                    | 25.0                      | 1.1                 |                  | 1.1   |
| Fresh fish              | 80.5                                     | 9.1                     | 8.1                       | 5.2                 | 2.9              | 2.3   |
| Frozen fish             | 75.0                                     | 12.5                    | 12.5                      | 6.3                 |                  |       |
| Cooked fish             | 89.1                                     | 9.0                     | 7.6                       | 2.4                 | 0.5              |       |
| Pies/samosa             | 85.6                                     | 11.5                    | 9.6                       | 1.9                 | 0.5              | 1.9   |
| Eggs                    | 95.3                                     | 4.8                     | 2.0                       | 1.5                 | 0.1              | 10    |
| Fresh milk              | 96.6                                     | 5.6                     | 2.9                       | 0.7                 | 0.2              | 0.5   |
| Sour milk               | 92.1                                     | 5.0                     | 5.0                       | 1.5                 |                  | 0.9   |
| Tea/coffee              | 89.0                                     | 4.8                     | 7.7                       | 1.7                 | 0.6              | 0.9   |
| Sugar                   | 89.7                                     | 6.4                     | 8.2                       | 1.9                 | 0.2              | 0.5   |
| Cooking oil             | 90.0                                     | 6.5                     | 7.8                       | 2.2                 | 0.2              | 0.4   |
| Snacks                  | 92.6                                     | 8.6                     | 8.9                       | 1.7                 | 0.2              | 1.0   |
| Sweets/chocolate        | 91.5                                     | 11.3                    | 7.5                       | 1.6                 | 0.3              | 1.3   |
| Chips/French fries      | 88.6                                     |                         | 13.4                      | 2.8                 | 0.2              | 0.2   |

### 6.3. Supermarket Patronage

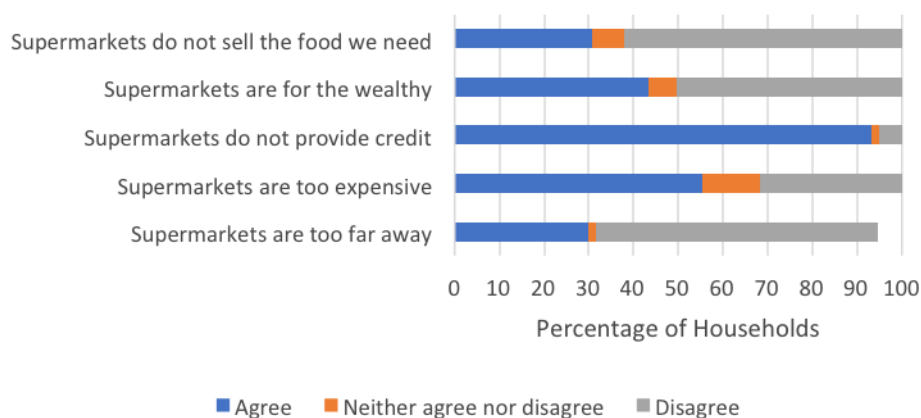
Almost three-quarters (71%) of the households shop regularly, at least once a month, at a supermarket. Reasons for shopping at supermarkets include the opportunity to buy in bulk (95% in agreement), that they have a greater variety of foods (95%), and that the food is of better quality (80%). There was mixed reaction to the proposition that food is cheaper at supermarkets, with just over half (53%) in agreement and 34% in disagreement (Figure 26).

**FIGURE 26: Perceptions of Supermarkets by Users**



On the other hand, those who do not regularly use supermarkets had differing views about them. Almost all the households agreed that supermarkets do not provide credit, but there were mixed reactions on the perceptions that supermarkets are expensive and that they are for the wealthy (Figure 27). Furthermore, about 62% of the households disagreed with the statement that supermarkets are too far away and that they do not sell the food that shoppers need.

**FIGURE 27: Perceptions of Supermarkets by Non-Users**





Nakumatt Supermarket, Nairobi

Source: <http://www.dhahabu.co.ke/2017/03/02/nakumatt-closes-store-nairobi/>



Neighbourhood Supermarket in Nairobi

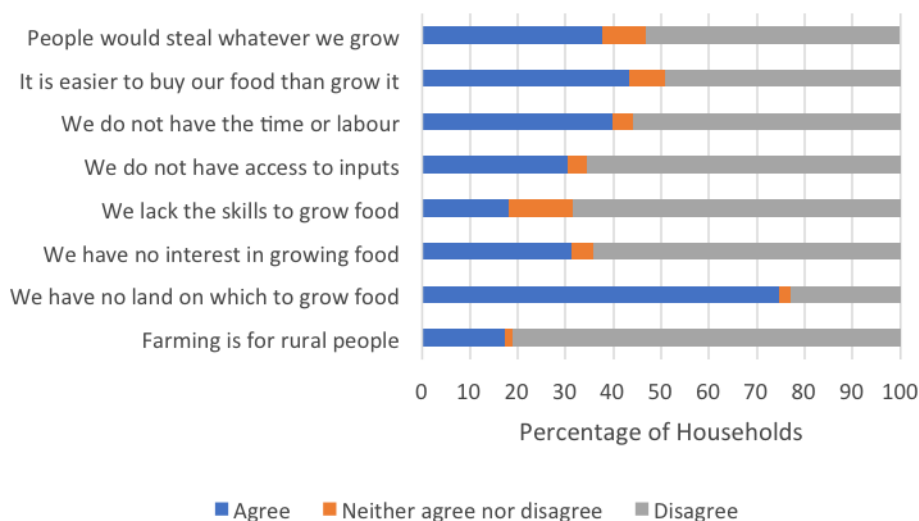
Source: Andrea Brown

## 6.4. Urban Agriculture

Although urban agriculture is seen as an important livelihood strategy in the context of escalating poverty and rising food prices, only 103 of the sampled households indicated that they grow their own food in the city. Furthermore, only 37 households participate in community food production schemes or communal food gardens and projects.

The households that did not practice urban agriculture had different perceptions about the activity (Figure 28). About three-quarters of the non-farming households agreed with the statement that they did not have land on which to grow crops. Access to a plot in town is an important determinant of whether or not a household practises urban agriculture. However, more than half of the households disagreed that farming is for rural people (80%), that they lack the skills to grow food (69%), that they do not have access to inputs (66%), that they have no interest in farming (64%), that they do not have the time or labour (56%) and that people would steal whatever they grew (53%). These findings demystify some of the negative perceptions about urban agriculture and show that the primary obstacle to growing food is lack of land.

**FIGURE 28: Perceptions of Urban Agriculture by Non-Farming Households**



For those who do grow crops, three types of urban agriculture can be distinguished. First, about 70% of the crop cultivators grow crops on their own housing plot or use hanging gardens, also called “on-plot” farming (Table 11). Second, about one-quarter of the cultivators grow crops on other plots within their residential areas. Finally, about 10% of the cultivators grow crops on riverbeds, roadsides or other urban land, also called “off-plot” farming.



**TABLE 11: Location of Urban Agriculture**

|   | No. | % of sample | % of crop cultivators |
|---|-----|-------------|-----------------------|
| On own housing plot                           | 63  | 4.5         | 61.2                  |
| Hanging garden                                | 9   | 0.6         | 8.7                   |
| Within residential area, but outside own plot | 25  | 1.8         | 24.3                  |
| On riverbed                                   | 2   | 0.1         | 1.9                   |
| On roadside                                   | 1   | 0.1         | 1.0                   |
| Other urban land                              | 8   | 0.6         | 7.8                   |

Vegetables – notably kale, which is popularly known as *sukuma wiki* – were grown by many of the cultivators (Table 12). Growing vegetables does not always require much input and, when they are available, the vegetables can be used on daily basis for food. Growing maize and fruits was less common. About one in five households producing their own food listed one or more “other” crops, such as bananas, beans, pumpkin, peas, potatoes, cassava, green pepper, carrots, onions, eggplant and spices.

**TABLE 12: Urban Agriculture Crops**

|             | No. | % of sample | % of crop cultivators |
|-------------|-----|-------------|-----------------------|
| Maize       | 32  | 2.3         | 31.1                  |
| Vegetables  | 89  | 6.3         | 86.4                  |
| Fruits      | 25  | 1.8         | 24.3                  |
| Other crops | 20  | 1.4         | 19.4                  |

Only 82 of the sampled households (6%) keep livestock in the city. Due to space constraints for keeping animals, small animals (chickens) are preferred by the livestock keepers (Table 13). However, those with enough space kept large animals (cows, goats, sheep and pigs). About one in eight livestock-keeping households named one or more “other” kinds of livestock, such as bees, ducks, turkeys and rabbits.

**TABLE 13: Urban Livestock Keeping**

|          | No. | % of sample | % of livestock keepers |
|----------|-----|-------------|------------------------|
| Cows     | 9   | 0.6         | 11.0                   |
| Goats    | 11  | 0.8         | 13.4                   |
| Sheep    | 7   | 0.5         | 8.5                    |
| Chickens | 77  | 5.4         | 93.9                   |
| Pigs     | 2   | 0.1         | 2.4                    |
| Other    | 10  | 0.7         | 12.2                   |

## 6.5. Food Transfers

Urban-rural linkages have always been an important part of urbanization processes in Sub-Saharan Africa. There is no doubt that many Kenyan urban households have rural components to their livelihoods and retain strong links with rural areas. With the current economic hardships, many urban dwellers in Sub-Saharan Africa in general are increasing their reliance on rural food and income sources. Rural links have become vital safety valves and welfare options for urban people who are particularly vulnerable to economic fluctuations.

In the survey, it became clear that urban households in Nairobi rely to varying degrees on an informal, non-marketed supply of food from their relatives and friends in urban and rural areas. More than half (57%) of the sampled households reported that they had received food transfers from relatives and friends in urban and rural areas in the previous year (Table 14). While the food transfers come from both urban and rural areas, the importance of rural food sources is particularly evident, especially from relatives. Eight out of every 10 households receiving food transfers get them from relatives in the rural areas.

**TABLE 14: Origin of Household Food Transfers**

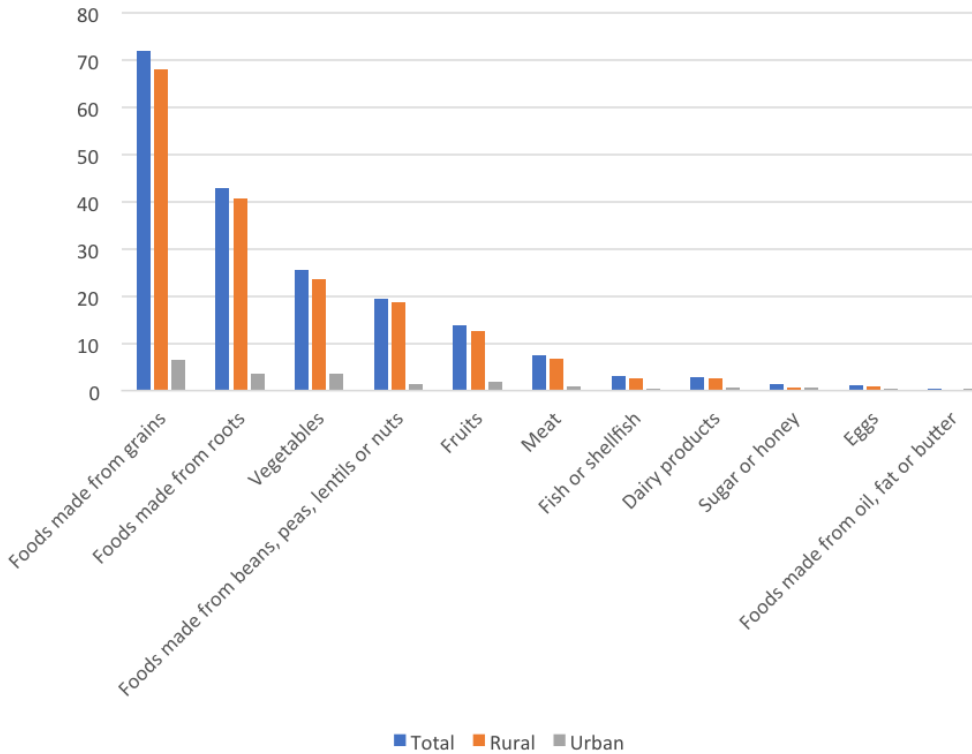
|                                | No. of households | % of total sample | % of households receiving food transfers |
|--------------------------------|-------------------|-------------------|--|
| Relatives in rural areas       | 645               | 45.6              | 80.6                                     |
| Friends in rural areas         | 40                | 2.8               | 5.0                                      |
| Relatives in other urban areas | 64                | 4.5               | 8.0                                      |
| Friends in other urban areas   | 51                | 3.6               | 6.4                                      |

Figure 29 shows that food transfers, largely from the rural areas, are dominated by cereals (primarily maize); roots and tubers (primarily potatoes); vegetables (primarily traditional vegetables); fruits; meat products (primarily chicken); and beans, peas, lentils and nuts. The type of food that comes from the rural to urban areas is dependent on the main crops produced by the rural households.

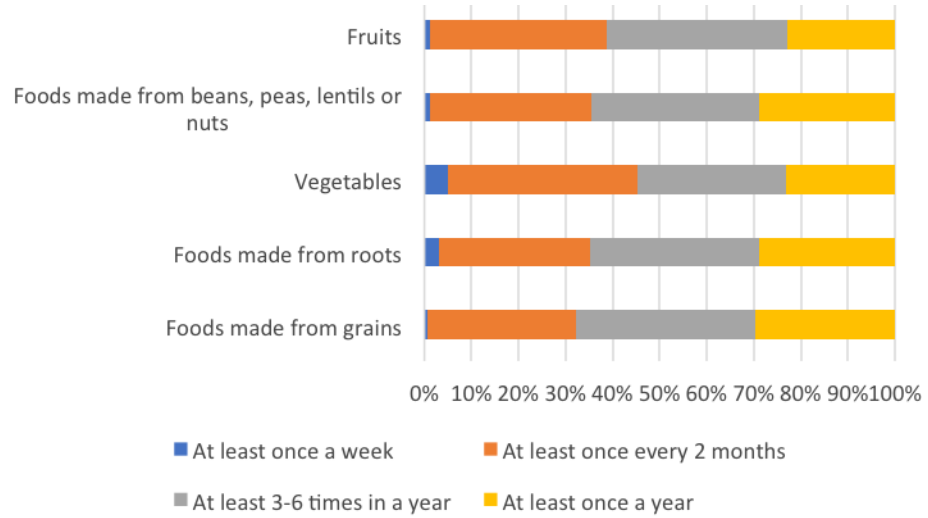
The frequency of food transfers from rural areas varies between “at least once in every two months” to “once a year” (Figure 30). However, a large proportion of recipient households experience food transfers “at least 3–6 times in a year”. This depends on cropping seasons, frequency of an urban dweller travelling to the rural areas, frequency of a rural relative travelling to the urban areas, and convenience of food transfers through other means.



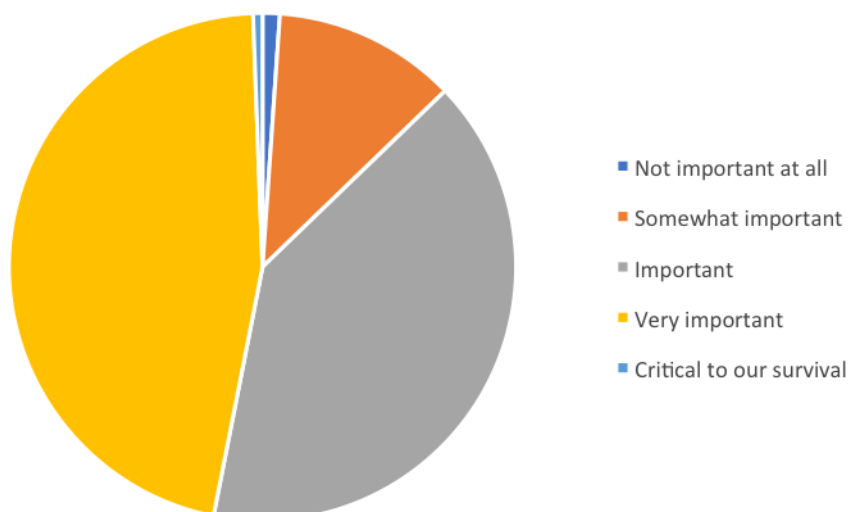
**FIGURE 29: Food Transfers by Type and Origin**



**FIGURE 30: Frequency of Food Transfers from Rural Areas**



The importance of food transfers to the household was measured subjectively, by how much the transferred food matters to the households involved (Figure 31). A large majority of the households receiving food transfers indicated that the food source is either very important (46%) or important (40%) to their survival.

**FIGURE 31: Importance of Food Transfers to the Household**

The need for additional food is indeed an important motive for food transfers. Over three-quarters (79.5%) of the households receiving food transfers said that they engaged in the practice “to help the household feed itself” (Table 15). For about one-quarter of the households, the food was sent as gifts. This is the normal reciprocity that occurs between urban and rural relatives.

**TABLE 15: Reasons for Food Transfers**

|                                    | No. | % of total sample | % of food transfer recipients |
|------------------------------------|-----|-------------------|-------------------------------|
| To help this household feed itself | 562 | 39.7              | 79.5                          |
| For traditional/ceremonial uses    | 12  | 0.8               | 1.7                           |
| Sent as gifts                      | 196 | 13.9              | 27.7                          |
| For business purposes              | 5   | 0.4               | 0.7                           |
| Other                              | 19  | 1.3               | 2.7                           |

## 7. CONCLUSION

One of the major issues to emerge in this household survey of Nairobi is the vital importance of the city’s food markets and associated informal food sector. However, the actual organization and functioning of these critical players in the city’s food system is not well understood. Nor are the broader local, regional and international supply chains that link them to suppliers and producers. The opportunities offered by a transforming food system to women and youth in Nairobi also need particular attention. The next phase of HCP research in Nairobi will build on this report by examining the functioning and role of food vendors in the city’s food system.

## ENDNOTE

1. The currency conversion rate used in this report is USD1 = KES102, which was the exchange rate in July 2015 at the time of the survey. <http://www.exchange-rates.org/>

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This report presents the results of a city-wide household food security survey of 1,434 Nairobi households, conducted by the Hungry Cities Partnership and the University of Nairobi. Among the key findings was that 70% of households in Kenya's capital experience food insecurity, with one-quarter severely food insecure. As the first city-wide survey of household food security in Nairobi, this report provides researchers and policy-makers with detailed data and information about the overall food security picture, as well as important insights into the operation of the city's food system. In particular, the report demonstrates the vital importance of Nairobi's food markets and associated informal food sector. Consumers believe that the informal food economy offers a wide range of products at a cheaper price than formal food outlets. However, the choice of formal or informal food sources depends on perceptions of a range of factors including affordability, variety, flexibility, proximity, convenience, credit facilities, health risks, freshness and quality. The Hungry Cities Food Purchases Matrix shows which kinds of foods are purchased at which outlets, as well as how many households purchase a particular food item. Findings include that informal markets are popular for fresh vegetables, fruits, chicken and fish, while supermarkets are the main source for maize meal, rice, pasta, tinned foods, frozen foods, tea, coffee, sugar and confectionary.



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