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No. 10: The State of Household Food Security in Maputo, Mozambique

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**THE STATE OF HOUSEHOLD FOOD
SECURITY IN MAPUTO, MOZAMBIQUE**

THE STATE OF HOUSEHOLD
FOOD SECURITY IN MAPUTO,
MOZAMBIQUE

INÊS RAIMUNDO, CAMERON MCCORDIC AND
ABEL CHIKANDA

SERIES EDITORS: PROF. JONATHAN CRUSH
AND DR LIAM RILEY

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- 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 8** *The Urban Food System of Windhoek, Namibia*
- No 9** *The State of Household Food Security in Nanjing, China*

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EXECUTIVE SUMMARY

This report builds on the comprehensive audit of Maputo's food system in the second of the Hungry Cities reports, *The Urban Food System of Maputo, Mozambique* (Chikanda and Raimundo 2016). It presents and analyses findings from a city-wide survey of 2,071 households conducted in 2014. The major findings include that:

- Most Maputo households (71%) are food insecure and more than a third (38%) can be categorized as severely food insecure. The mean Household Food Insecurity Access Score (HFIAS) was 6.5 with more than a quarter of households having scores of 10 or higher.
- Levels of food insecurity varied considerably across the city. The mean HFIAS for households in the lowest income tercile was 12.0, compared with 2.5 for those in the upper quintile. Similarly, 69% of households in the lowest quintile were severely food insecure compared to 16% in the upper quintile.
- Dietary diversity was extremely low, with an average Household Dietary Diversity Score (HDDS) of 4.1 out of a possible 12.
- Almost 50% of households had gone without food due to price increases in the six months prior to the survey. Meat and cereal price increases had affected most households.
- Markets and small shops are the two most important food sources in the city, with over 90% of households purchasing food from markets and just over 70% buying from small shops.
- Rice and white bread were purchased by the greatest share of households. Most bread was purchased daily at a bakery, while most rice was purchased monthly at a small shop.
- About a third of households purchase food at supermarkets. The foods most strongly associated with supermarkets are fresh milk, sweets and chocolate, tea or coffee, tinned foods, and frozen meat and chicken.
- Only one in five households engages in urban agriculture in the city. Reasons for not engaging include that it was easier to buy food than to grow it (58% in agreement) and that they had no land on which to grow food (36%).

The survey results suggest a sharp divide in food security status between households in the formal and informal areas of the city. Given the differences in infrastructure access between the formal and informal areas of the city, and the close relationship between infrastructure access and food insecurity in Maputo, the informal/formal divide may be a physical manifestation of severe inequality across multiple deprivations in the city. Given that the majority of Maputo's population growth between 1980 and 2007 occurred in informal areas, there is an urgent need to address the infrastructure service and food security challenges in these areas.

1. INTRODUCTION

In 2008, the African Food Security Urban Network (AFSUN) conducted a baseline survey in Maputo and found extremely high rates of household food insecurity in low-income areas of the city (Raimundo et al 2014, 2016). A follow-up survey in 2014 by the Hungry Cities Partnership (HCP) drew a city-wide sample from Maputo to assess whether food insecurity had improved or worsened in poor neighbourhoods and to examine the degree of food security inequality across the city. This report presents the findings of this 2015 survey and is divided into six sections: section two outlines the research methods used in the survey. Section three provides demographic and economic profiles of the sampled households. Section four discusses the levels of food insecurity in Maputo. Section five describes various aspects of the food system including where households access food and their perspectives on supermarkets and urban agriculture as food sources. The final section of the report discusses the implications for further research.

2. METHODOLOGY

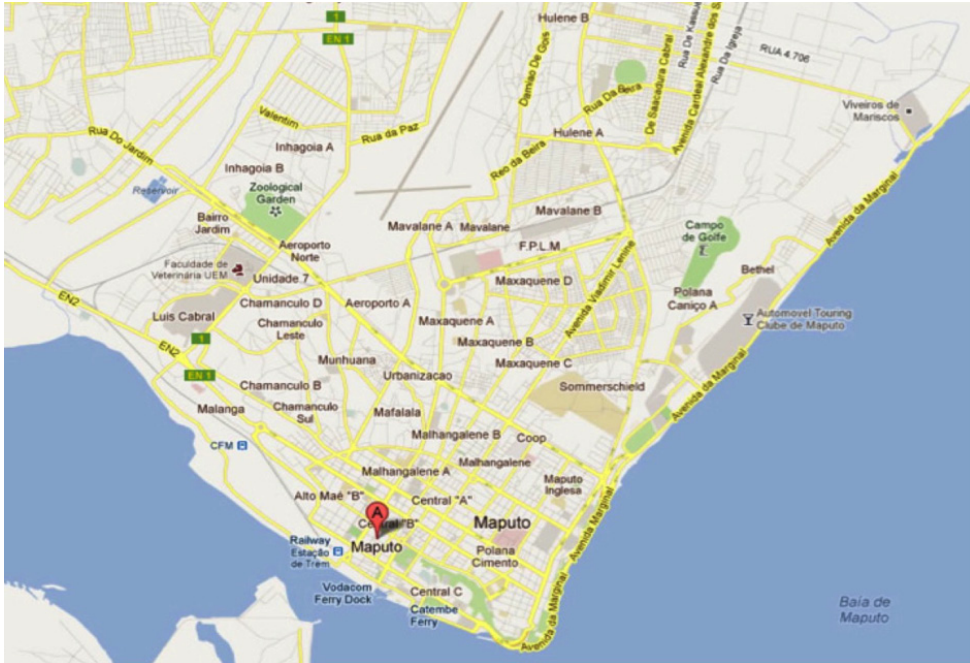
The household survey results presented in this report are derived from the implementation of the HCP household food security survey, which is based on the household food security survey instrument first developed by AFSUN (see www.afsun.org). The instrument included questions about household experiences of food insecurity, food sources, economic circumstances, and livelihood activities. It was administered at the household scale to an adult member of the household who was knowledgeable about income and expenditures and food purchasing practices in the household. Household membership was defined as people who “eat from the same pot” and sleep in the same dwelling and included members of the household who are away for work (migrants) or for other reasons, with the qualification that household members had to reside in the dwelling for at least six months of the year on average.

The sampling method aimed to capture a city-wide representation of the population of Maputo City (about 1.3 million) (Figure 1). The sampling strategy involved a two-stage process: first 19 wards (bairros) were randomly selected in the five mainland districts in the City of Maputo. The sample sizes for these 19 wards were approximated using proportionate allocation sampling (the sample sizes drawn from each ward were proportional to the size of each ward relative to the total population of Maputo) (Table 1). The enumerators (students from Eduardo Mondlane University) were instructed to survey every third household

along their sampling routes. The starting point and route for each enumerator within each ward was determined by team supervisors who ensured that the routes did not overlap and that the entire ward was covered. The research team comprised 25 enumerators, three enumerator supervisors, a research coordinator and a senior researcher. The entire survey was completed in nine days of fieldwork and involved interviews with 2,071 households. The sampling strategy aimed to provide as representative a sample as possible, given the logistical constraints of working in a rapidly expanding city with many informal settlements and limited access to recent census data. Figure 2 shows the spatial distribution of the sampled households for which GPS coordinates were recorded.

TABLE 1: Sample Distribution Across Wards in Maputo

Ward	No.	%
Aeroporto A	85	4.1
Alto mae A	70	3.4
Central A	46	2.2
Chamanculo A	83	4.0
Costa do sol	79	3.8
Hulene A	166	8.0
Inhagoia B	77	3.7
Jardim	67	3.2
Laulane	172	8.3
Mafalala	109	5.3
Magoanine A	164	7.9
Magoanine B	78	3.8
Malanga	86	4.2
Malhangalene B	95	4.6
Maxaquene B	186	9.0
Polana Caniço B	205	9.9
Polana Cimento B	39	1.9
Xipamanine	108	5.2
Zimpeto	156	7.5
Total	2,071	100

FIGURE 1: Bairros of the City of Maputo

Source: <http://www.istanbul-city-guide.com/map/mozambique/maputo-map.asp>

FIGURE 2: Location of Sampled Households

3. PROFILE OF MAPUTO HOUSEHOLDS

3.1 Demographic Characteristics

The average size of the sampled households was 4.83 with a median size of 4, a minimum size of 1 and a maximum of 20. Figure 3 shows the distribution of households by size. Fewer than 50 households had more than 10 members and more than half (54%) had three to five members. The distributed ages of the household members are consistent with the youthful demographics of cities in Africa with over half of the household members under the age of 25 (Figure 4). Fewer than 5% of household members were over the age of 60.

The HCP survey categorized households into five types based on the composition of members and their relationships to one another. Female-centred and male-centred households include a head without a spouse or partner and any combination of children, relatives and other members. They are distinguished from each other by the sex of the head. Nuclear and extended households include a head with a spouse or partner. The distinguishing feature between these two types is that the nuclear household only includes children as additional members, whereas extended households include other kinds of members too (e.g. parents or siblings of the head of the household). The distribution of household types in Maputo is illustrated in Figure 5. The most common household structure was female-centred (31%). Nuclear households were also common, representing 29% of the sampled households. Extended households made up 23% and the least common household type was male-centred (14%). The remaining 4% of households were categorized as “other.”

FIGURE 3: Distribution of Household Size

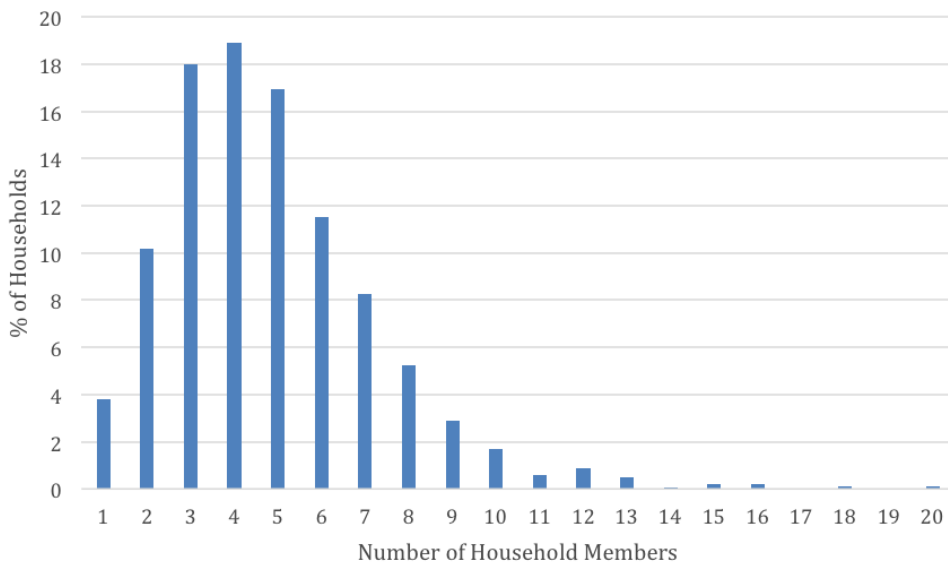


FIGURE 4: Age of Household Members

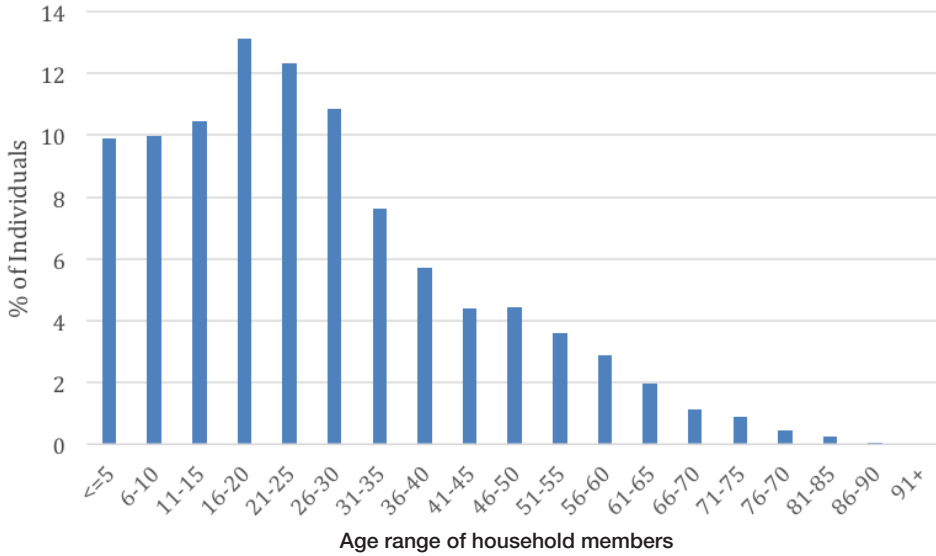
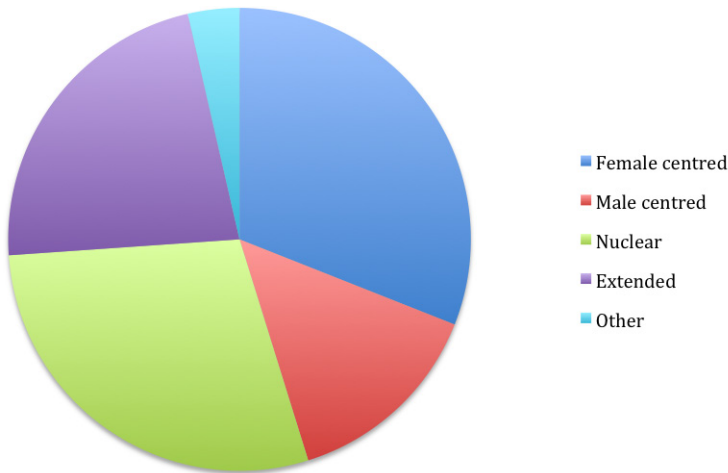


FIGURE 5: Household Typology



High-Income Housing

Source: <https://www.ifri.org/en/publications/editoriaux-de-lifri/afrique-questions/land-tenure-tensions-maputo-study-neighborhood>



High-Rise Flats
Source: J. Crush



Low-Rise Flats
Source: J. Crush



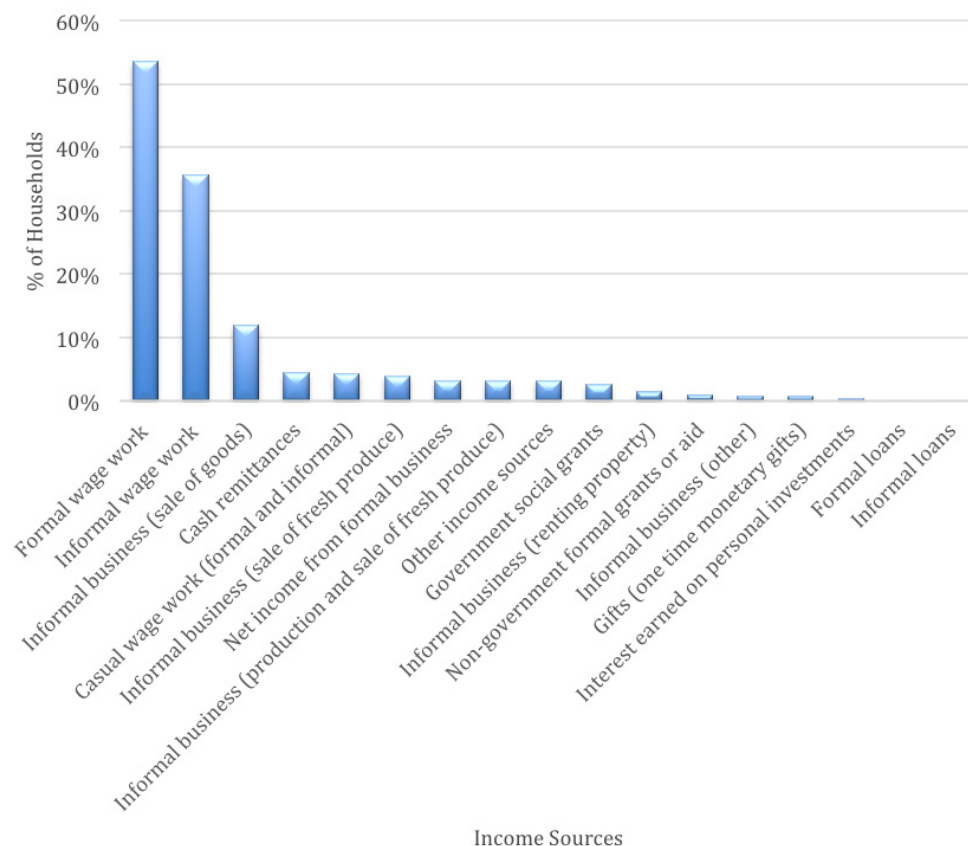
Informal Housing, Mafalala Ward

Source: J. Crush

3.2 Economic Profile of Households

The survey collected information on sources of household income to gain an understanding of the economic activities of households in Maputo. Figure 6 gives a sense of the various ways in which households in Maputo access cash income. Formal wage work was the most common source of income with 54% of households receiving income from this source in the month prior to the survey. The second most widely reported income source was informal wage work (36%), followed by informal businesses involving the sale of goods (12%).

Each type of income source was accompanied by an estimate of how much money was received from that source in the previous month. Table 2 includes the mean incomes received from each source where at least 30 respondents provided a response. The most lucrative source on average was from casual wage work (USD449 per month), which was reported by less than 2% of all households. While it is higher than the average income from formal wage work (USD388), casual work is inherently short term and does not typically provide a reliable and consistent income source. Informal wage work was less remunerative than formal wage work (USD290 versus USD388).

FIGURE 6: Monthly Household Income Sources**TABLE 2: Average Monthly Income by Income Source**

Income source	No.	MZN	USD
Formal wage work	468	12,934	388
Informal wage work	291	9,668	290
Casual wage work (formal and informal)	31	14,965	449
Net income sale of fresh produce	36	3,591	108
Net income sale of goods	77	6,127	184
Cash remittances	55	4,743	142
Government social grants	35	3,254	98

Note: The exchange rate used is based on the historical rate posted on xe.com for December 31, 2014. It is rounded to 0.03 Mozambican meticaís to one United States dollar.

The monthly income for the 954 households that supplied data was calculated by combining the cash income from all sources (excluding loans). The household incomes were divided into the income quintiles shown in Table 3. The average household income was MZN11,568 or USD347. The median household income was less than half of the mean, at about MZN5,500 or USD165. The

difference between the mean and the median is indicative of the high degree of income inequality in Maputo.

TABLE 3: Income Quintiles

Income quintiles	MZN	USD
1	<= 2,500	<=75.00
2	2,501–4,500	75.01-135.00
3	4,501–7,000	135.01-210.00
4	7,001–13,600	210.01-408.00
5	13,601+	408.01+

Income data was supplemented with data about household expenditures in the previous month (Figure 7). Food and groceries was the most commonly identified household expenditure in the previous month (with 96% of households incurring this expense). Publicly provided utilities and fuel costs were incurred by about 70% of households, followed by transportation (48%) and telecommunications (40%).

FIGURE 7: Monthly Household Expenditures

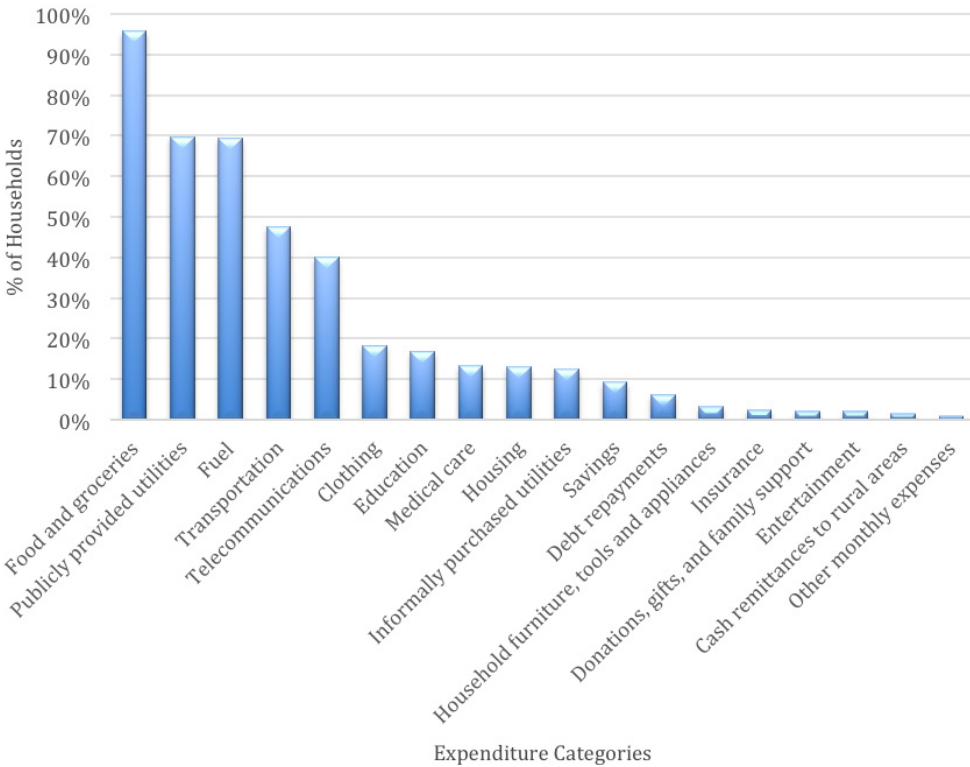


Table 4 shows how much the average household spent on various items in the previous month. Among these household expenditures, furniture and appliances cost the most, although these are occasional expenses reported by only 3% of households. While the number of households reporting their cost of housing was only 11% of the total, the average cost of food and groceries (USD113) is only slightly less than the average cost of housing (USD123). This confirms that food is a major expense for many households.

TABLE 4: Mean Monthly Household Expenditures

Household expenses	No.	MZN	USD
Food and groceries	1,292	3,761	113
Publicly provided utilities	1,286	950	29
Fuel	1,293	919	28
Transportation	593	2,334	70
Telecommunications	430	1,132	34
Clothing	245	2,245	67
Education	271	3,016	90
Medical care	194	1,165	35
Housing	236	4,115	123
Informally purchased utilities	233	2,234	67
Savings	93	4,033	121
Debt repayments	101	2,509	75
Household furniture, tools and appliances	51	7,686	231
Insurance	29	2,965	89
Donations, gifts, family support	29	2,209	66
Entertainment	33	4,736	142
Cash remittances to rural areas	20	2,338	70
Other monthly expenses	15	3,197	96

Educational level is both a reflection of socio-economic status and a determining factor in the ability to earn an adequate income. Two-thirds of adult household members had lower qualifications than a high school diploma (Figure 8) and 11% had no formal schooling at all.

The most common work status was self-employment, followed closely by working full-time (Figure 9). Together, these two work status categories represent more than 50% of household members over 18 years old. Approximately 60% of the household members were either self-employed or employed full-time or part-time in wage work.

FIGURE 8: Highest Level of Education of Household Members over 18

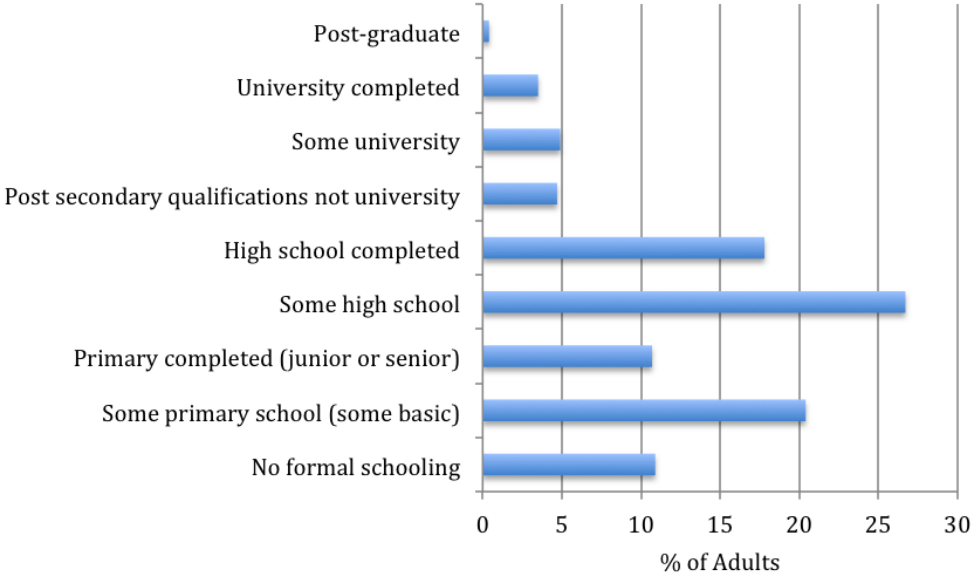
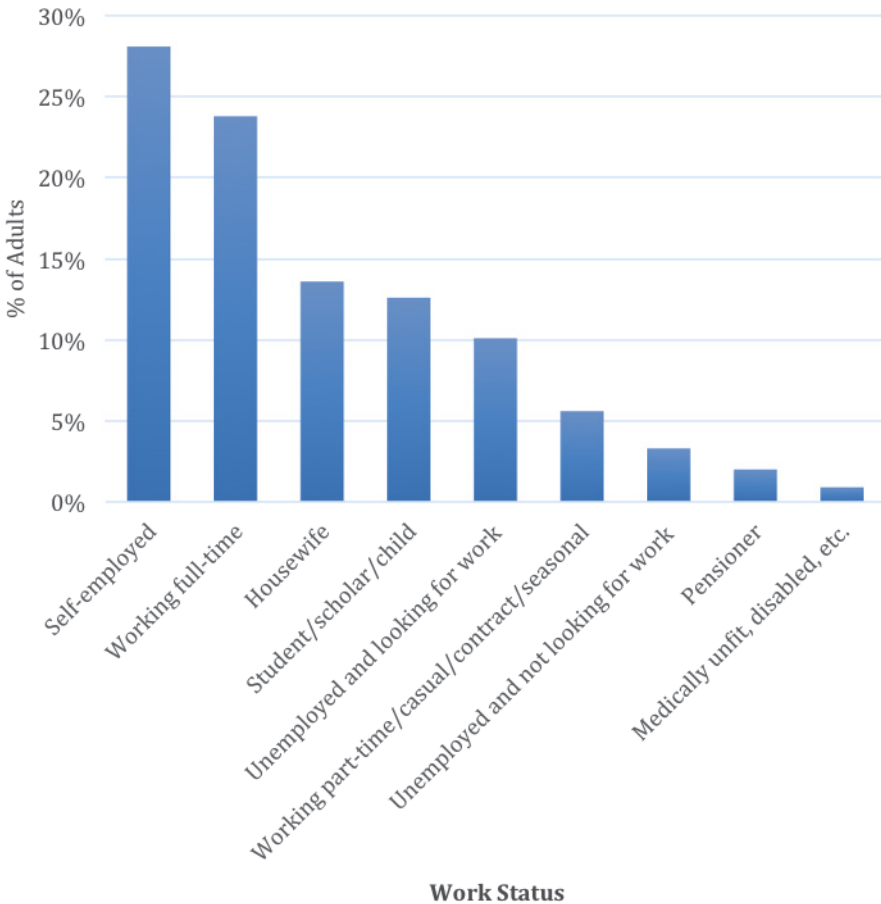


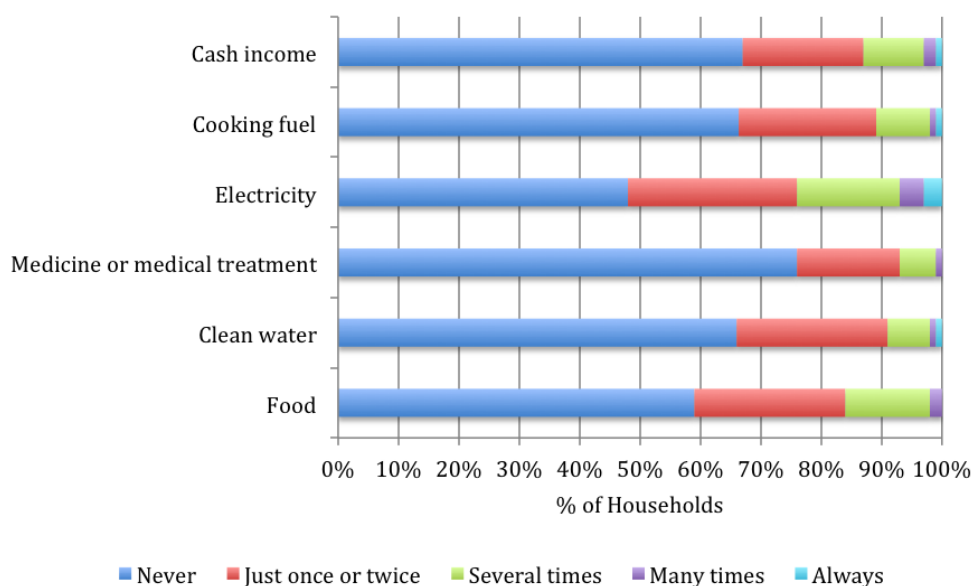
FIGURE 9: Work Status of Household Members over 18



3.3 Poverty Profile

The Lived Poverty Index (LPI) measures how frequently in the previous year people went without basic necessities such as food, clean water, medicine, fuel to cook food, and an income (Mattes 2008). In the year prior to the survey, as many as 52% of respondents had gone without electricity in their home at least once (Figure 10). Nearly a quarter (24%) reported going without electricity “several times” or more frequently. Many respondents had gone without food, with 42% going without food at least once in the previous year. Clean water for home use and a cash income were generally available: more than two-thirds reported never having gone without both. Medicine and medical treatment were also generally accessible: only 8% reported going without these in the previous year.

FIGURE 10: Frequency of Going Without Basic Services and Necessities



The frequency of experiencing deprivation of these essential items can be calculated into a Lived Poverty Index score, where 0 is the least poor (none of these items was inaccessible in the past year) and 4 is the poorest (all of these items were constantly inaccessible). The distribution of the LPI scores indicates that the majority of households received relatively low scores (Figure 11). The mean score was 0.53 out of 4 and the median score was 0.33 out of 4. For comparison, a 2005 national survey of Mozambique indicated an average LPI score of 1.5 (Mattes 2008).

A cross-tabulation of household income with lived poverty indicates that households with higher incomes were more frequently categorized as having lower rates of lived poverty than households with lower incomes (Table 5). Male-centred

households had the lowest rates of lived poverty when compared with other household types, while female-centred households had the highest rates of lived poverty.

FIGURE 11: Distribution of LPI Categories

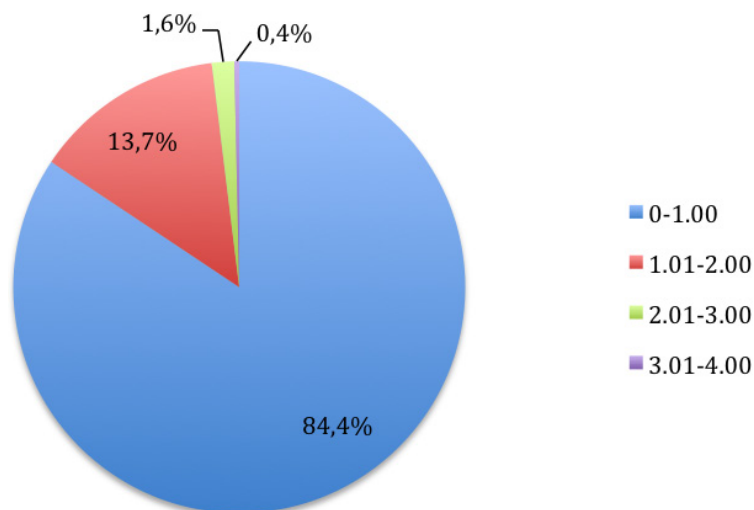


TABLE 5: Lived Poverty by Household Income and Structure

		Lived Poverty Index Categories			
		<= 1.00	1.01 - 2.00	2.01 - 3.00	>3.01
Income quintiles	1	65.3%	26.5%	6.6%	1.5%
	2	79.9%	17.5%	2.6%	
	3	91.4%	8.6%		
	4	92.0%	7.5%	0.5%	
	5	97.9%	2.1%		
Household structure	Female-centred	81.0%	16.2%	2.4%	0.3%
	Male-centred	88.7%	9.2%	2.1%	
	Nuclear	86.6%	12.6%	0.7%	0.2%
	Extended	84.6%	14.7%	0.7%	

4. LEVELS OF FOOD INSECURITY

Household food insecurity is multi-dimensional and highly contextual (Haysom and Tawodzera 2018). The HCP survey focuses on household experiences of food deprivation, constrained access and dietary choices to develop a picture of the food security situation across the city. This section reports on the levels of food insecurity and corresponding factors, such as income level and household structure. The HCP approach combines analysis based on four metrics of household food insecurity:

- The Household Food Insecurity Access Scale (HFIAS) measures the degree of food insecurity during the four weeks prior to the survey (Coates et al 2007). The minimum score is 0 and the maximum is 27. The higher the score, the more food insecurity the household experienced. The HFIAS provides insights into the kinds of challenges that households face in accessing food, while capturing subjective experiences of deprivation. It contains nine questions regarding different components of the household experience of food insecurity.
- The Household Food Insecurity Access Prevalence (HFIAP) indicator uses the responses to the HFIAS questions to group households into four levels of food security: 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.
- The Household Dietary Diversity Score (HDDS) captures the number of food groups consumed within the household in the previous 24 hours (Swindale and Bilinsky 2005). Based on the Food and Agriculture Organization's classification of food groups for Africa, the maximum number is 12. An increase in the average number of different food groups consumed provides a quantifiable measure of greater household dietary diversity and suggests better nutrition.
- The Months of Adequate Household Food Provisioning (MAHFP) indicator captures changes in the household's ability to ensure that food is available above a minimum level throughout the year (Bilinsky and Swindale 2010). The MAHFP is administered by determining whether the household has gone without adequate monthly household food provisioning in the previous year. If it has, respondents are asked to specify the months in which the household went without adequate food. The final MAHFP score is calculated as 12 minus the number of months during which households experienced a lack of adequate provisioning. A score of 12 means that the household had adequate food provisioning every month in the previous year.

4.1 Household Experiences of Food Insecurity

The HFIAS and HFIAP results provide insights into the types of food-insecurity-related experiences taking place in Maputo households. Over half of the households reported not eating preferred foods because of a lack of resources, eating unwanted foods because of a lack of resources, worrying that they would not have enough food, and eating a limited variety of food because of a lack of resources (Figure 12). Few households experienced the more severe events, and yet one in five had gone a whole day and night without eating because of a lack of resources, and about one in three had experienced having no food of any kind in the house. In general, it appears that having a reduced variety of food was more

common than going without food entirely, but extreme forms of deprivation are commonplace in many households.

FIGURE 12: Responses to Food Insecurity

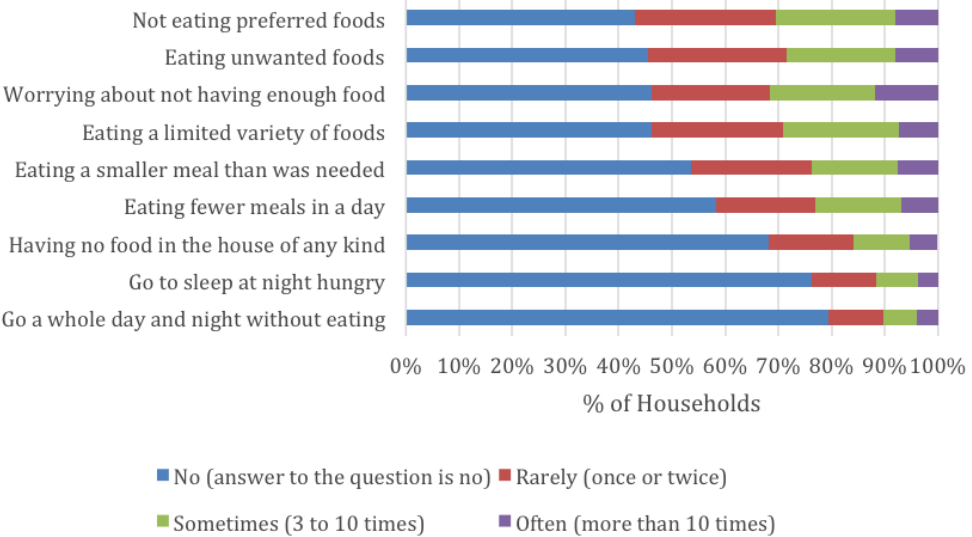
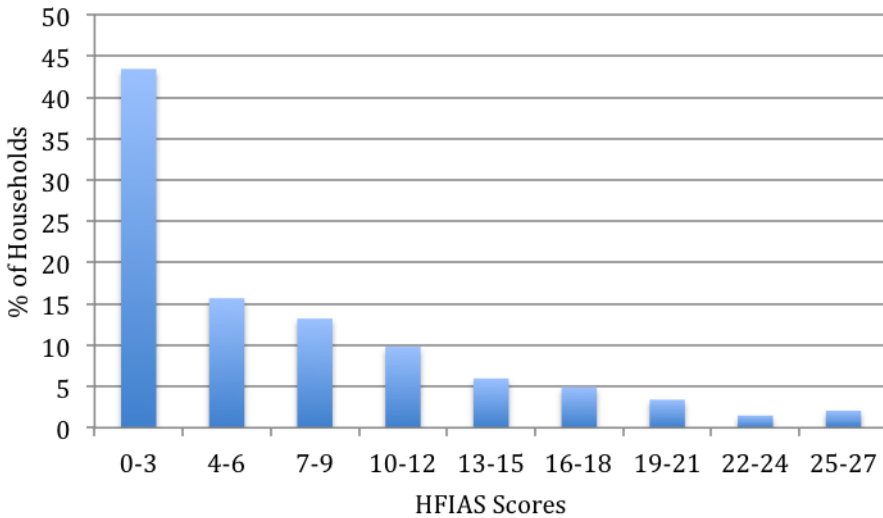


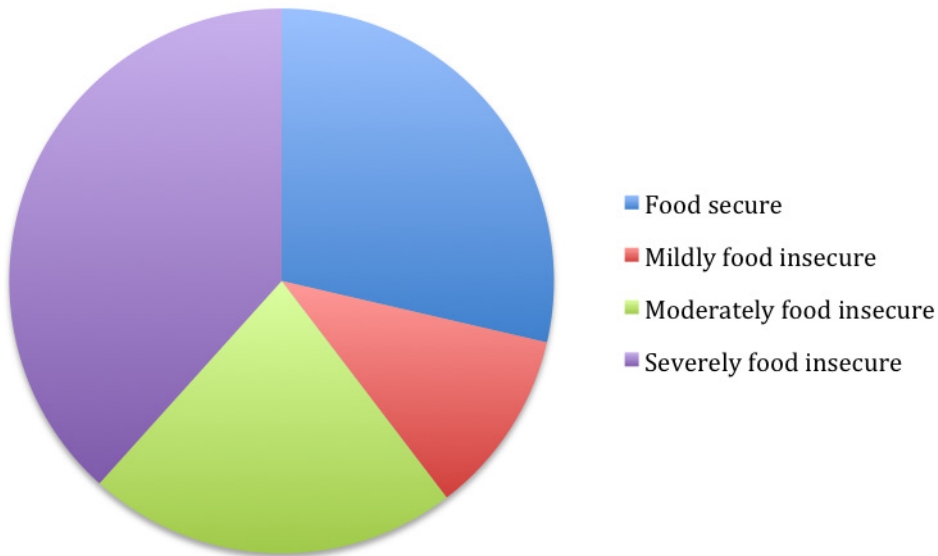
FIGURE 13: HFIAS Scores



The distribution of the HFIAS scores is illustrated in Figure 13. The largest share, 43% of households, very rarely or never experience events indicative of food insecurity (scores of 3 or less). Most households (57%) had scores of four or higher and more than a quarter (28%) had alarmingly high scores of 10 or higher. The mean HFIAS score was 6.5. By way of comparison, the 2008 AFSUN baseline survey in low-income communities in Maputo had a mean score of 10.4 (Raimundo et al 2014).

The HFIAP calculation, which accounts for the differences in severity of the experiences listed in Figure 12, shows a sharp divide between over a third (38%) of severely food insecure households and 29% of fully food secure households (Figure 14). The categories of mildly (11%) and moderately (22%) food insecure made up the remaining one-third of the households.

FIGURE 14: HFIAP Results



4.2 Lack of Dietary Diversity

The average number of food groups consumed in the previous 24 hours was 4.1 and the median number was 4. The minimum was 0 and the maximum was 11. The distribution of HDDS shows that the mode was only two food groups (Figure 15). In addition, almost 60% of households had consumed fewer than five food groups in the previous 24 hours. These statistics suggest that Maputo residents are consuming an extremely narrow range of foods, which could have several negative nutritional and health implications.

The 2008 AFSUN baseline survey of low-income communities found a mean HDDS of 5.7. Thus, despite including households from across the city in the current survey, dietary diversity has apparently declined. This contrasts with the HFIAS, which shows an improvement since 2008 because of the inclusion of households from better-off areas of the city. The latter finding is expected but why the HDDS should have declined requires explanation. There does seem to have been a significant decline in the consumption of fruit, vegetables, oil and sugar between 2008 and 2014. In addition, it appears that lower-income households are largely responsible for the overall decline in dietary diversity. This could be because of decreased availability (most fruit and vegetables are imported

from South Africa), increased prices or both. Households may also be reducing their dietary diversity as incomes rise and preferred foods are more consistently accessible, which would be in line with observations of narrowing tastes in other cities (Legwegoh and Hovorka 2016).

A narrow diet is not, by definition, unhealthy if it contains key macro- and micro-nutrients. However, the diet in Maputo appears to be narrow with an emphasis on simple carbohydrates. Almost all households (97%) consumed food made from grains. Next were vegetables (54%); other foods such as condiments, tea and coffee (54%); and sugar or honey (51%) (Figure 16). Protein-rich foods such as meat, fish and eggs were consumed by a minority of households.

FIGURE 15: Household Dietary Diversity Scores

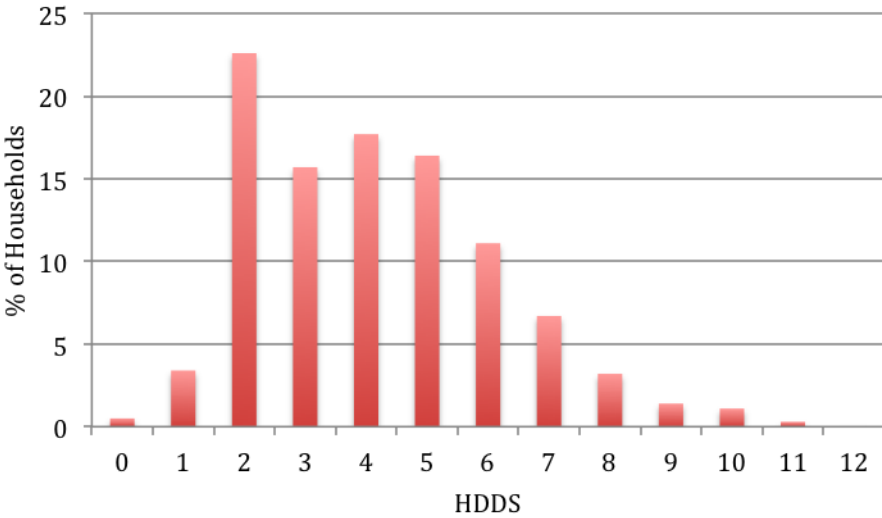
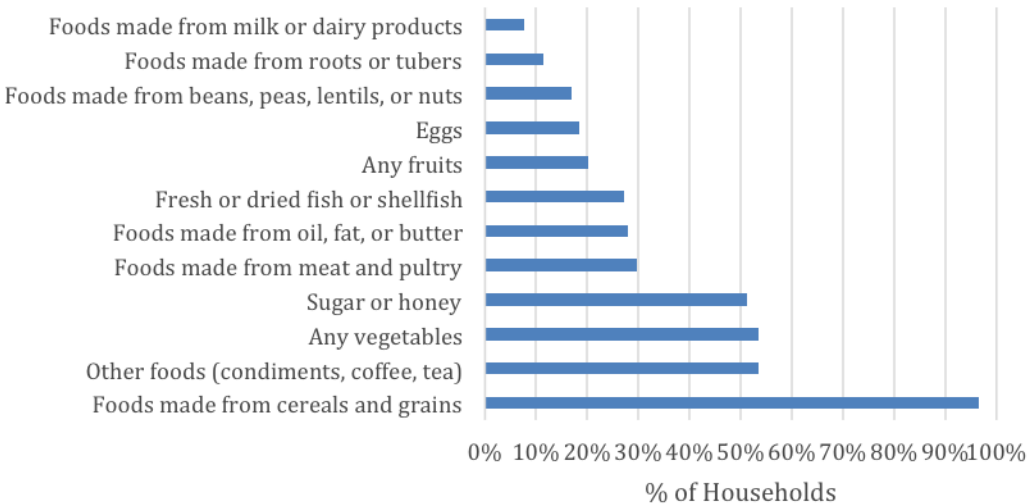


FIGURE 16: Food Groups Consumed in Previous 24 Hours



4.3 Adequacy of Food Provisioning

According to the MAHFP measure, the average number of months in the previous year that people had adequate food was 10.4 and 62% of the households had 12 months of adequate food provisioning (Figure 17). Figure 18 shows which months of the year households saw the worst food provisioning. October, November and December were associated with the greatest adequate household food provisioning, with 92%-95% of the households indicating adequate provisions (Figure 18). This time of year corresponds with the most productive agricultural season. August and February were least frequently identified as months of adequate household food provisioning, although all nine months outside of October-December were within the range of 83%-86% adequate provisioning.

FIGURE 17: Number of Months of Adequate Household Food Provisioning

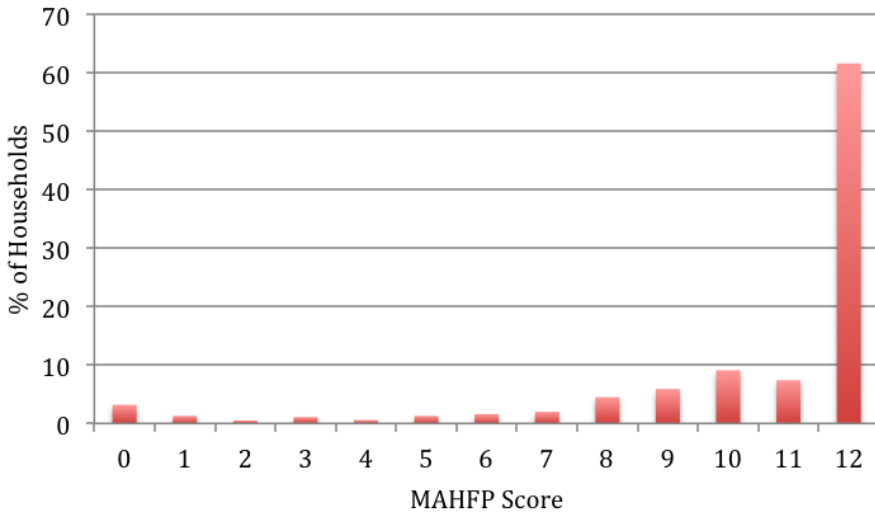
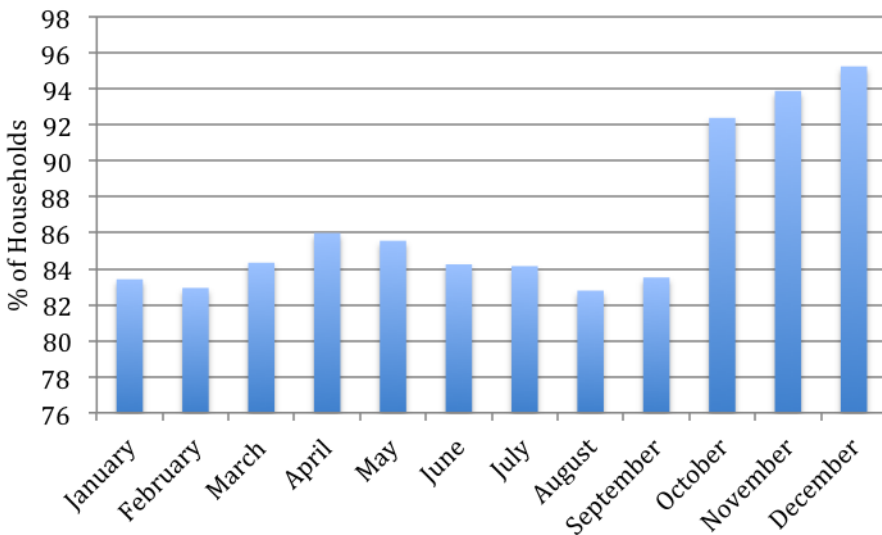


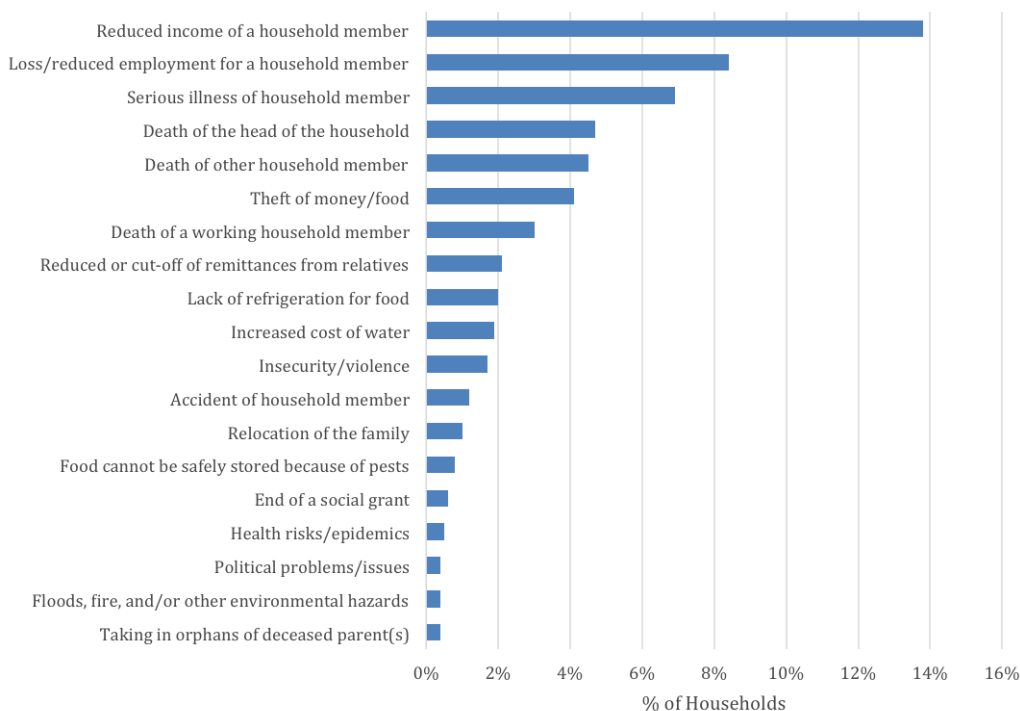
FIGURE 18: Months with Adequate Household Food Provisioning



4.4 Food Hazards

The survey attempted to identify specific problems and hazards that might have prevented households from obtaining food in the previous six months. The most frequently experienced hazards that disrupted food access were reduced income of a household member (experienced by 14% of households), loss/reduced employment of a household member (8%), and serious illness of a household member (7%) (Figure 19).

FIGURE 19: Food-Related Hazards



4.5 Impact of High Food Prices

Almost half of the households (48%) went without some types of food due to high food prices in the six months prior to the survey, with 4% of households having this experience “every day” (Figure 20). Figure 21 shows the results of a follow-up question for households that went without food because of high prices about what types of foods they went without. Of the items that households went without most frequently, meat was by far the most common (65% of households affected).

FIGURE 20: Frequency of Going Without Because of Food Prices

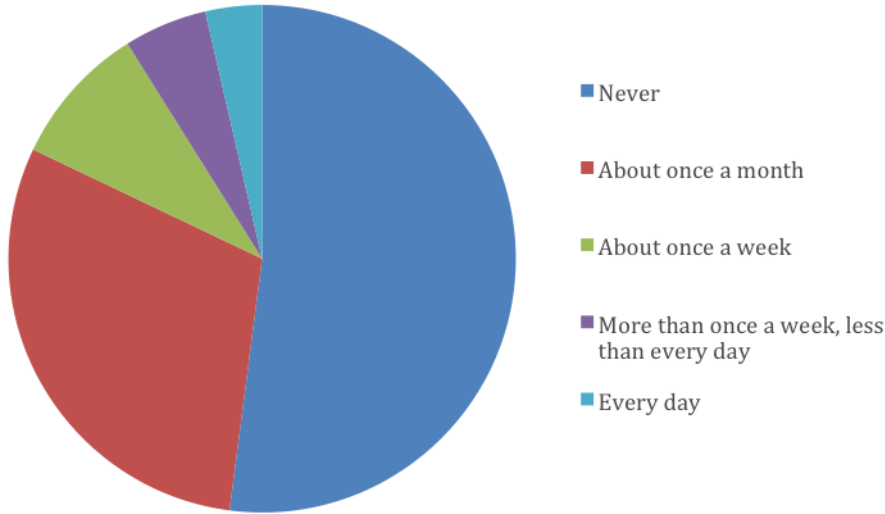
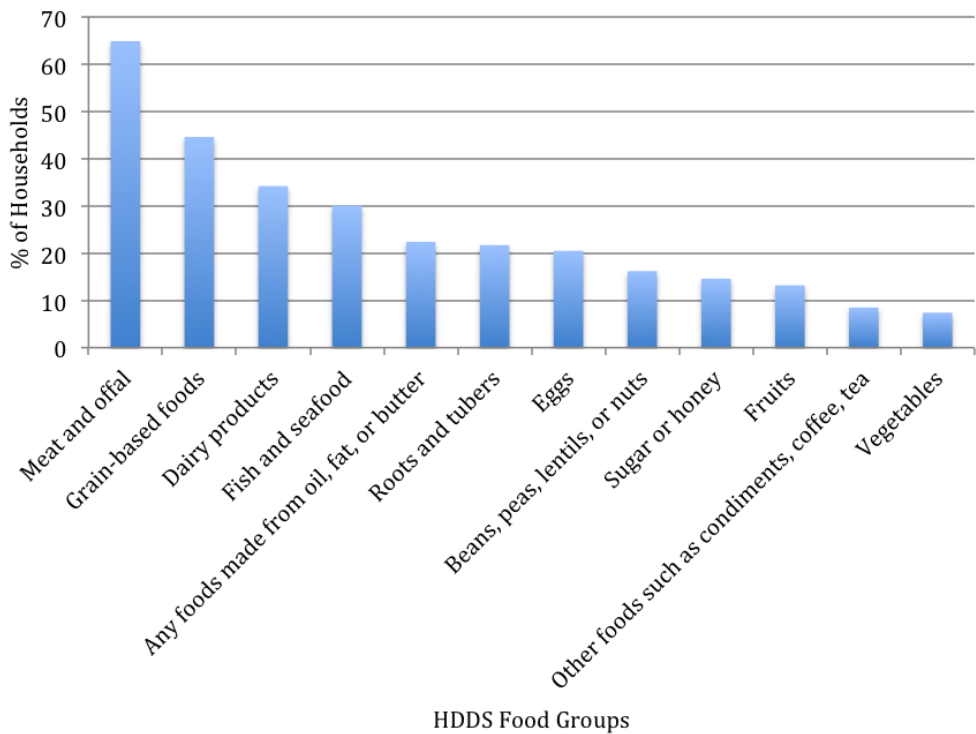
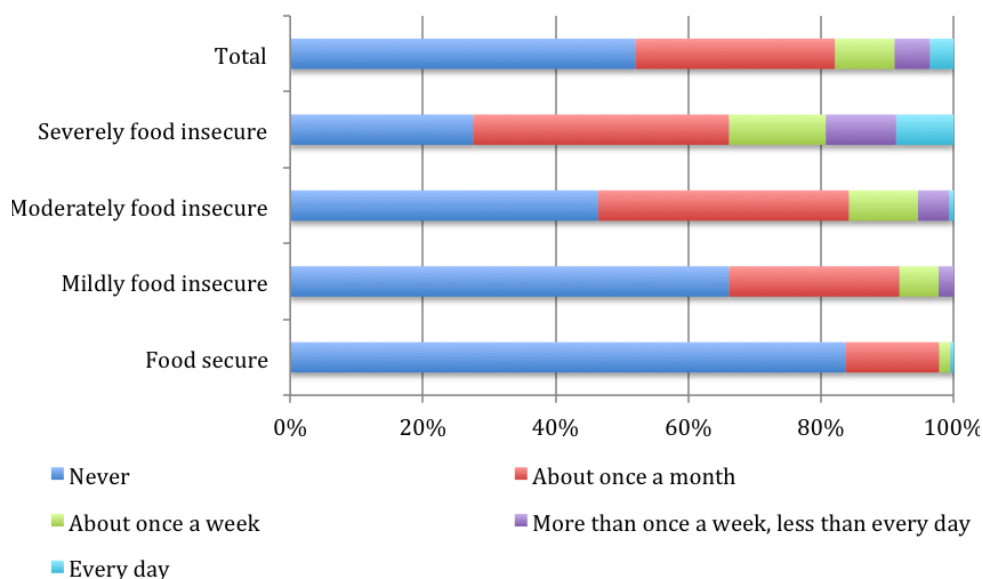


FIGURE 21: Types of Foods Gone Without Because of Food Prices



Cross-tabulating the frequency of households going without food due to its cost with household food security status clearly indicates a relationship between the two. Figure 22 demonstrates that food secure households were much less likely to go without food due to price than households categorized as severely food insecure. Nearly one in 10 severely food insecure households had gone without food every day in the previous six months because of price.

FIGURE 22: Reduced Food Access by Food Security Status

5. FACTORS SHAPING HOUSEHOLD FOOD SECURITY

In this section, food security scores are cross-tabulated with household characteristics to gain a more detailed view of the drivers of inequality in food insecurity at the household level.

5.1 Household Type and Food Insecurity

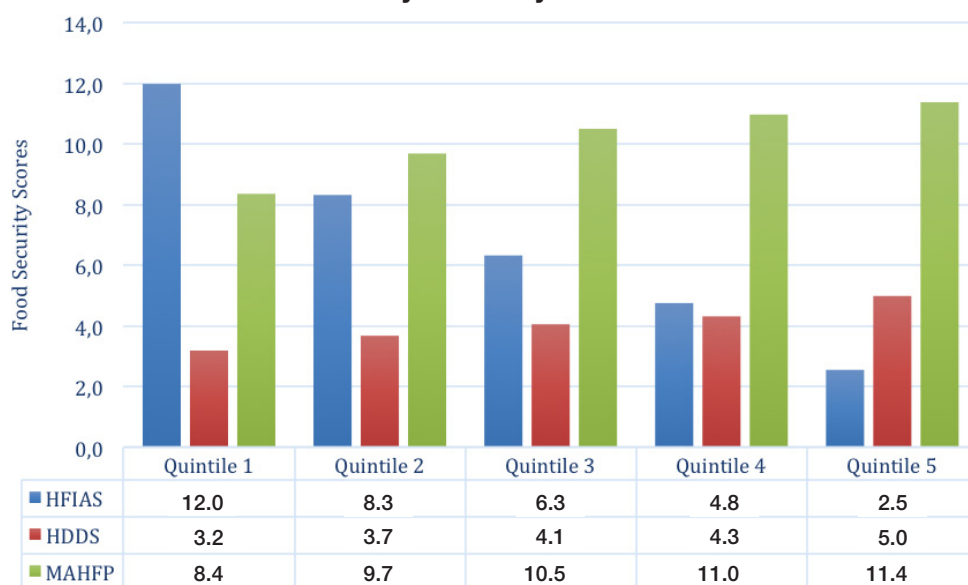
Table 6 provides the mean HDDS, HFIAS and MAHFP for households in each of the four household types. Male-centred households had the lowest mean HDDS (3.5) but the highest mean MAHFP (10.7) and the second highest HFIAS score. Female-centred households demonstrated the worst food security scores in terms of mean HFIAS (7.3) and MAHFP (10.2), but were slightly above the mean HDDS for all households (4.2 compared to 4.1 for all households). Nuclear households had the most favourable HFIAS (6.0) and HDDS (4.4) results. These findings may result from a high proportion of widowed, separated or divorced household heads among female-centred households, while nuclear households may have higher earning potential with at least two adult potential income-earners in the household.

TABLE 6: Food Security Scores and Household Type

Household structure	Mean HDDS	Mean HFIAS	Mean MAHFP
Female-centred	4.2	7.3	10.2
Male-centred	3.5	6.1	10.7
Nuclear	4.4	6.0	10.4
Extended	4.3	6.3	10.4
Total	4.1	6.5	10.4

5.2 Household Income and Food Insecurity

Cross-tabulation of food security scores with household income quintiles shows a consistent linear relationship between income and food security (Figure 23). The differences are most pronounced in the HFIAS scores, which range from a high of 12.0 among the lowest-income households to a low of 2.5 among the highest-income households. Similarly, the MAHFP and HDDS scores indicate declining food insecurity associated with increased household income. Together these trends demonstrate the close association between household income and food security in Maputo.

FIGURE 23: Mean Food Security Scores by Household Income Quintiles

When household food insecurity scales are cross-tabulated with household income, households with higher incomes are much more likely to be food secure than households with lower incomes. Only 11% of households in the lowest income quintile were food secure compared with 60% of those in the highest quintile. Consistent with this trend, 69% of households in the lowest income quintile were severely food insecure compared with only 16% in the upper quintile. The middle-income groups have the highest proportion of households in

the middle categories of “mildly” and “moderately” food insecure. Despite the fact that food security outcomes improve with income, some households in the higher income bracket continue to be severely food insecure, suggesting that relatively higher income does not automatically make a household food secure, for example if many people depend on that income or if the income is inconsistent.

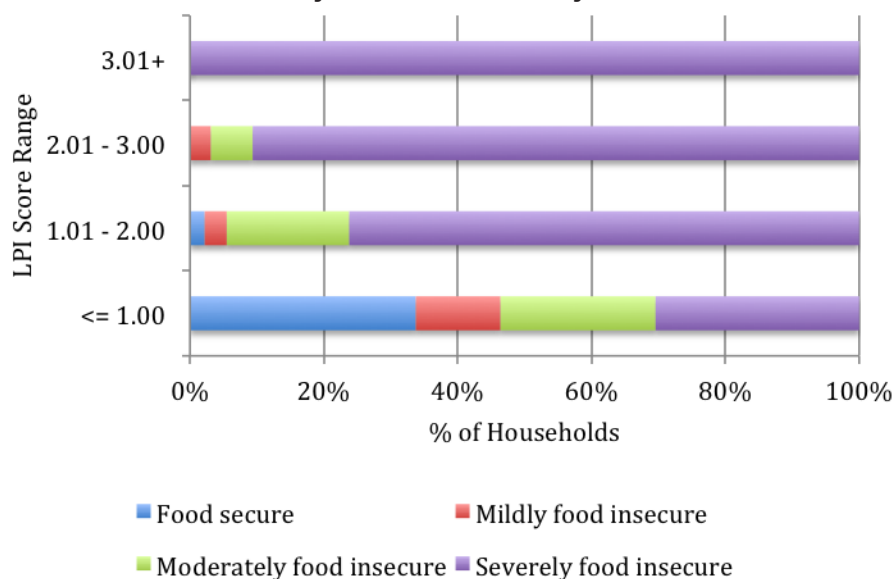
TABLE 7: Household Income and HFIAP

		Household Food Insecurity Access Prevalence			
		Food secure	Mildly food insecure	Moderately food insecure	Severely food insecure
Household income quintiles	1	11.1%	6.0%	14.1%	68.8%
	2	18.5%	6.7%	24.6%	50.3%
	3	22.2%	13.6%	27.8%	36.4%
	4	33.5%	14.4%	23.4%	28.7%
	5	59.8%	9.0%	15.3%	15.9%

5.3 Lived Poverty and Food Insecurity

There is a strong link between the LPI and HFIAP scores (Figure 24). The cross-tabulation indicates that higher lived poverty scores are associated with increased likelihood of being more severely food insecure. All households in the poorest LPI category (3.01+) were severely food insecure and the least poor LPI category (≤ 1.00) had the highest proportion of food secure households (34%).

FIGURE 24: Lived Poverty and Food Insecurity



The association between the LPI and HFIAP indicates two things. First, decreasing frequency of access to the resources and services covered in the LPI is associated with worse HFIAP scores. Second, there is a large increase in the severity of food insecurity when comparing households with consistent access to the LPI resources against households with inconsistent access to any of the LPI resources. These conclusions indicate that any inconsistent access to the LPI resources and services may be a key factor in determining household food insecurity (McCordic 2016).

6. SOURCES OF FOOD

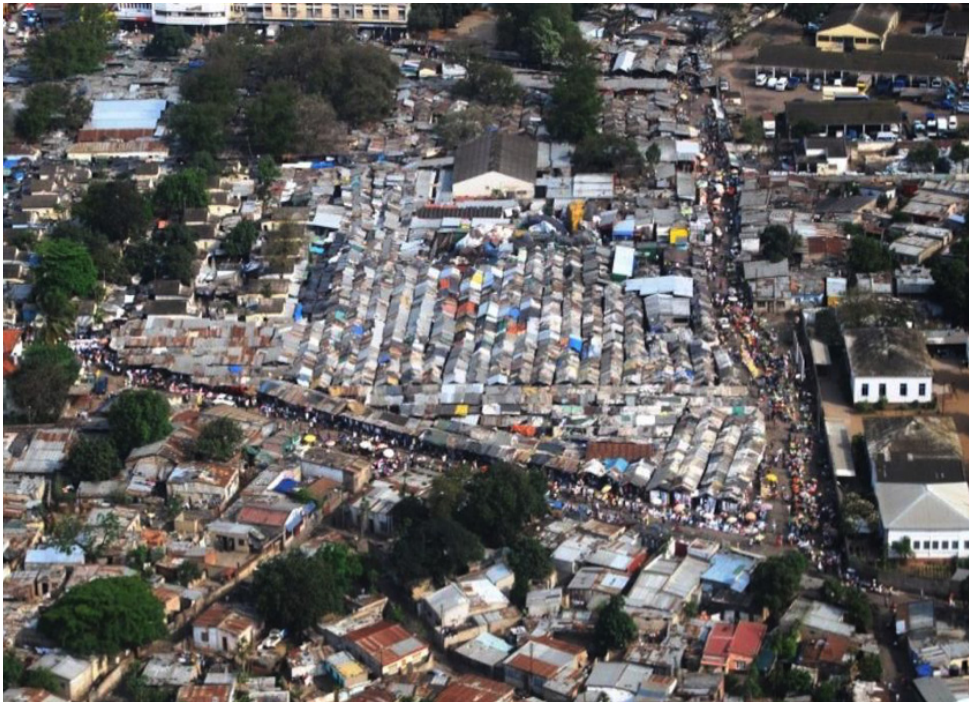
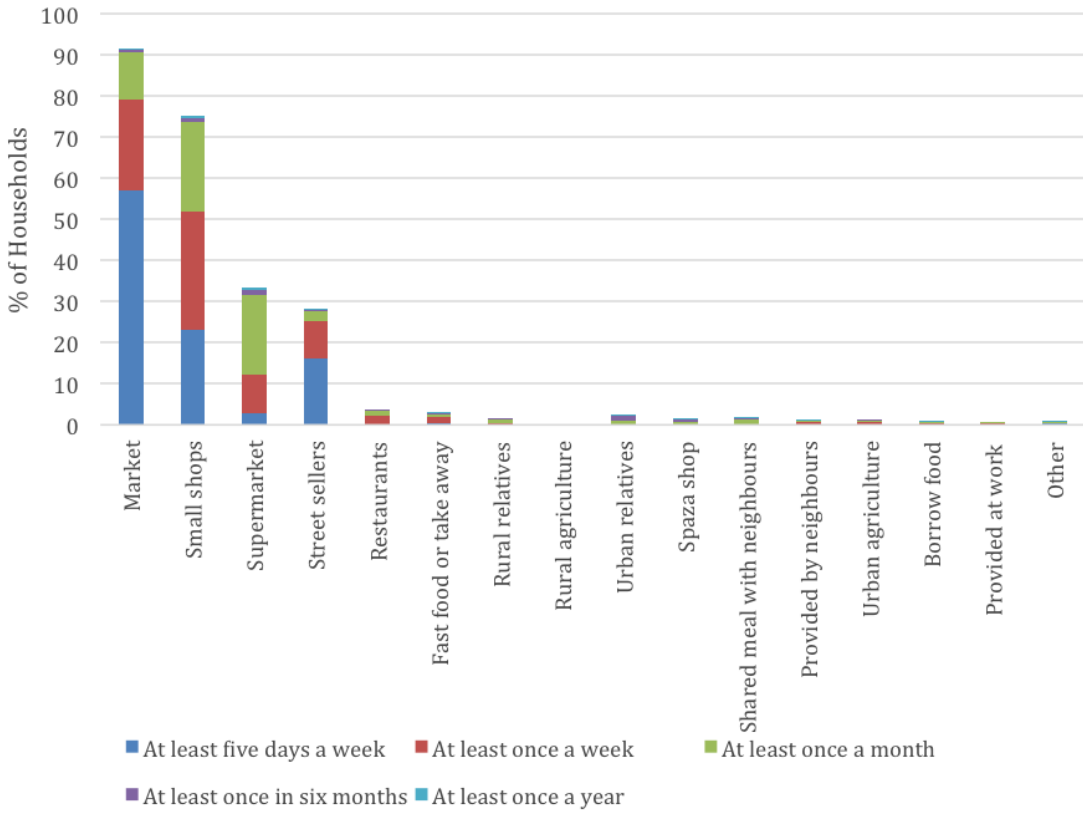
6.1 Major Food Sources

The major household food sources in Maputo include four main types of retail outlet: formal sector supermarkets, small shops, the 40 formal city markets dispersed across the city, and informal street and backyard vendors. Most households in Maputo source their food from city markets, small shops and informal vendors. Supermarkets are also an increasingly popular food source (Chikanda and Raimundo 2016). The diversity of Maputo's food system is evident in the widespread use of formal and informal, commercial and agricultural, and global and local food sources.

Markets are the most widely used source, patronized by 91% of households (Figure 25). Small shops are the second most widely used source, patronized by 75% of households. Supermarkets are patronized by 34% of households and street sellers by 28%. No other food source was accessed by more than 5% of the households.

Looking at the frequency with which each food source is patronized, significant differences emerge (Figure 25). The vast majority of those who buy food from the markets and small shops do so at least once a week. However, only 37% of those patronizing supermarkets do so at least once a week. Supermarkets are far more likely to be patronized on a monthly basis.

FIGURE 25: Frequency of Accessing Food from Different Sources



Xipamanine Market, Maputo

Source: <https://www.minube.net/place/xipamanine-market--a424741>



Mercado Central de Maputo (Maputo Central Market)

Source: <https://www.southafrica.to/transport/cruises/Starlight/Sinfonia/Sinfonia-Maputo.php5>



Mafalala Market

Source: J. Crush



Roadside Market
Source: J. Crush



Small Shop, Mafalala Ward
Source: J. Crush



Informal Street Vendor, Magoanine Ward
Source: J. Crush



Backyard Stall, Magoanine Ward
Source: J. Crush



Maputo Supermarket

Source: <https://zitamar.com/mo-ibrahim-teams-portuguese-retail-group-6m-mozambique-deal/>



Maputo Fast-Food Outlet, Alto Mae Ward

Source: <https://unebaladeporelmondo.wordpress.com/2015/12/07/johannesburg-maputo-10-131115/>

6.2 Food Purchasing Patterns

The Hungry Cities Food Purchasing Matrix (HCFPM) allows us to determine what foods were purchased at which outlets in the month prior to the survey, as well as how many households purchased a particular food item (Crush and McCordic 2017). Rice and white bread are by far the most commonly purchased food items in Maputo, with over 80% of households purchasing these products at least once per month (Figure 26). The primary difference between these two

staples is the frequency of purchase. Over 70% of the sampled households purchase white bread at least five days per week (compared to only 6.4% buying rice at least once a week). The vast majority of households (73.0%) purchase rice on a monthly basis. At least 60% of households bought cooking oil, sugar and vegetables (fresh or cooked) in the month prior to the survey. While between 30% and 40% purchase cooking oil and sugar on a monthly basis, 28% purchase vegetables at least five days per week. Most animal-based products are purchased frozen rather than fresh or cooked. There is a widespread perception in Maputo that frozen chicken is cheaper than fresh chicken because the former is sold by the kilogram and the latter by the unit.

FIGURE 26: Frequency of Food Item Purchases

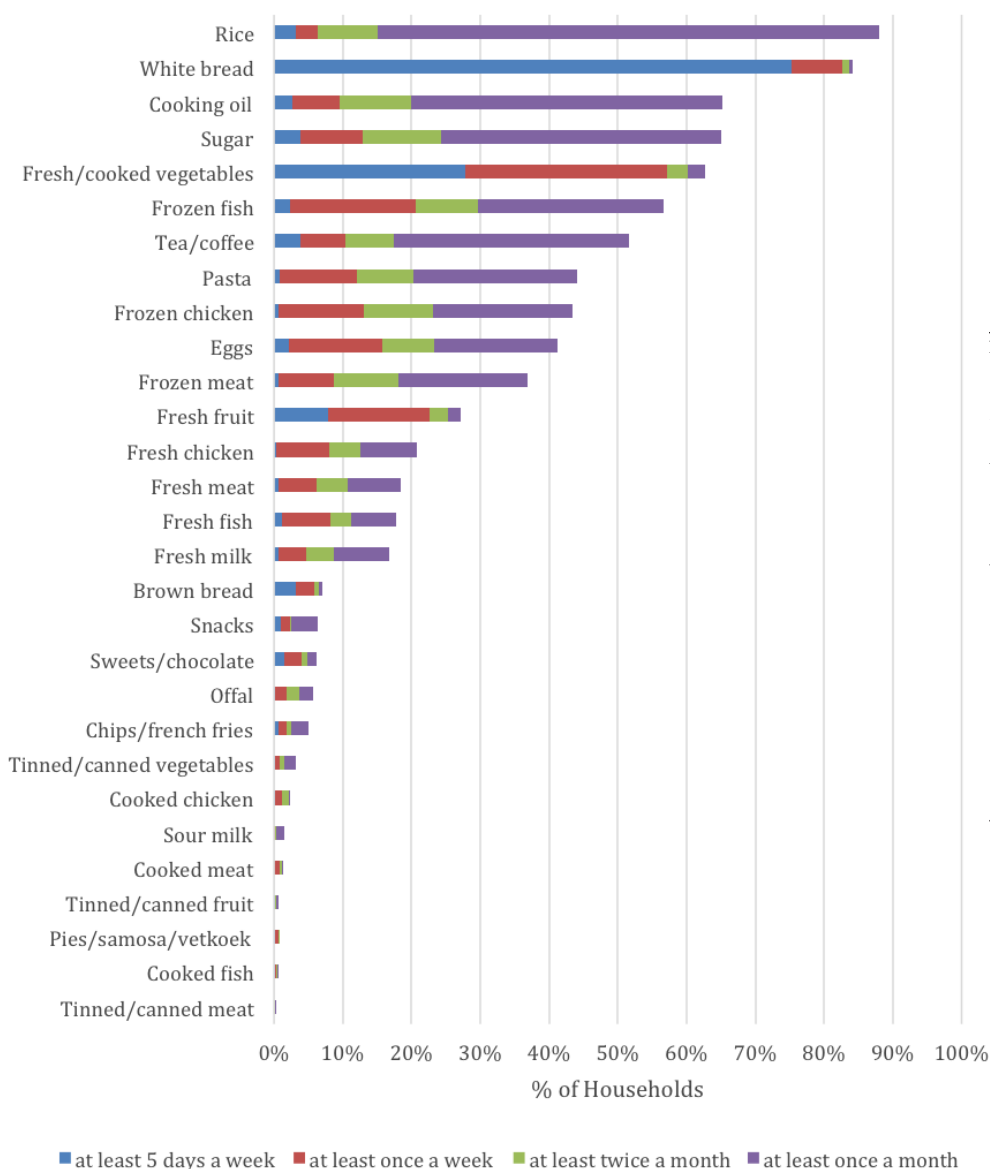


TABLE 8: Food Items Purchased by Food Source

	% of households purchasing food	% of households								
		Super-market	Small shop	Butchery or bakery	Take away	Res-taurant	Formal market	Informal market	Spaza, tuck shop or kiosk	Street seller
Rice	88.2	15.5	66.0	0.4	0.2	0.2	21.0	17.4	0.7	2.8
White bread	84.3	8.0	8.4	60.1	0.7	0.2	11.9	19.1	0.1	16.4
Cooking oil	65.2	21.9	68.1	0.3	0.2	0.1	25.3	19.9	0.5	5.2
Sugar	65.1	19.5	69.7	0.2	0.3	0.1	25.9	21.0	0.5	5.5
Fresh or cooked vegetables	63.3	4.4	7.5	0.2	0.4	0.2	47.2	53.0	0.1	16.2
Frozen fish	57.0	11.1	68.1	5.8	0.2	0.2	26.9	14.2	0.4	1.9
Tea or coffee	51.8	21.9	69.3	0.5	0.4	0.3	27.1	17.4	0.7	5.0
Pasta	44.3	24.0	68.2	0.1	0.3	0.3	24.2	16.7	0.4	2.4
Frozen chicken	43.6	24.7	61.3	8.1	1.1	-	24.2	16.2	0.4	2.2
Eggs	41.5	24.3	65.3	0.7	0.7	0.0	26.3	19.7	0.5	7.2
Frozen meat	37.2	23.9	45.0	29.2	1.0	0.1	26.1	14.1	0.3	3.4
Fresh fruit	27.2	26.4	14.7	0.4	0.7	0.7	47.9	41.5	0.2	24.6
Fresh chicken	20.8	8.8	32.3	2.6	1.4	0.2	40.5	38.4	-	11.4
Fresh meat	18.6	13.2	25.5	36.4	2.6	0.0	28.3	23.6	0.3	5.7
Fresh fish	18.0	8.1	40.6	3.8	1.3	0.5	36.8	35.5	0.8	11.0
Fresh milk	16.8	46.8	61.2	0.9	0.6	0.9	18.7	10.1	0.0	2.3
Brown bread	7.0	34.5	22.8	46.2	0.7	2.8	24.1	14.5	0.0	9.0
Snacks	6.4	26.3	76.7	-	0.8	4.5	42.9	8.3	5.3	11.3
Sweets or chocolate	6.3	57.3	53.4	-	-	1.5	22.9	19.8	0.8	9.9
Offal	5.8	25.6	49.6	9.9	0.0	1.7	22.3	28.9	0.8	8.3
Chips	5.0	33.7	41.3	1.9	1.9	2.9	16.3	24.0	-	8.7
Tinned vegetables	3.1	71.9	64.1	-	-	-	18.8	9.4	-	-
Cooked chicken	2.4	20.4	10.2	4.1	12.2	46.9	28.6	14.3	10.2	2.0

Sour milk	1.6	45.5	63.6	3.0	3.0	-	51.5	24.2	3.0	-
Cooked meat	1.4	10.3	17.2	27.6	6.9	37.9	20.7	13.8	17.2	6.9
Pies or samosa	0.8	43.8	31.3	0.0	12.5	56.3	25.0	-	25.0	-
Tinned fruit	0.8	62.5	62.5	-	-	-	25.0	-	-	-
Cooked fish	0.7	13.3	13.3	6.7	20.0	40.0	26.7	20.0	6.7	-
Tinned meat	0.5	40.0	50.0	-	-	-	30.0	30.0	-	-

The HCFPM also collects data on the geographical location where each food item is normally purchased. The majority of households purchase the listed food items within their neighbourhood and very few purchase any food items at sources outside the city (Table 9). The table highlights instances where more than half of the households purchased an item from a source in a particular location. Every food item on the list (with the exception of pies/samosas, which were purchased by less than one percent of the households) was obtained by a majority of households in their own neighbourhood.

TABLE 9: Food Purchases by Food Source Location

	% of households purchasing food	% of households					
		Within my neighbourhood (in walking distance)	On road to or from work	Central Business District	Other shopping area	Outside the city	Other
Rice	88.2	90.6	3.2	4.4	13.1	1.3	0.2
White bread	84.3	96.2	3.6	1.3	7.9	0.3	0.2
Cooking oil	65.2	89.8	6.6	5.0	17.1	1.5	0.8
Sugar	65.1	91.4	6.2	4.0	17.2	1.3	1.2
Fresh or cooked vegetables	63.3	93.2	2.3	2.1	12.2	1.4	1.3
Frozen fish	57.0	91.9	3.9	4.3	12.4	1.4	0.4
Tea or coffee	51.8	89.3	7.6	3.8	18.2	1.8	1.1
Pasta	44.3	89.2	6.9	5.1	18.0	2.1	0.8
Frozen chicken	43.6	86.5	6.5	5.9	17.4	3.5	1.0
Eggs	41.5	87.0	8.1	5.8	17.0	4.1	1.3
Frozen meat	37.2	82.5	8.9	7.6	21.9	5.6	1.0

Fresh fruit	27.2	84.4	13.5	6.6	22.0	3.0	2.3
Fresh chicken	20.8	90.5	5.3	5.6	14.0	3.0	1.2
Fresh meat	18.6	81.0	6.5	5.7	19.0	8.8	1.8
Fresh fish	18.0	84.4	13.5	6.6	22.0	3.0	2.3
Fresh milk	16.8	78.7	15.5	10.3	23.3	2.9	1.7
Brown bread	7.0	73.8	18.6	9.7	25.5	4.1	2.8
Snacks	6.4	91.0	18.0	9.0	21.1	1.5	1.5
Sweets or chocolate	6.3	71.8	32.8	7.6	38.2	3.8	3.8
Offal	5.8	87.6	9.9	1.7	19.0	4.1	5.0
Chips	5.0	75.0	15.4	10.6	26.9	1.0	2.9
Tinned vegetables	3.1	79.7	17.2	7.8	45.3	1.6	3.1
Cooked chicken	2.4	67.3	28.6	22.4	24.5	12.2	-
Sour milk	1.6	81.8	21.2	12.1	42.4	12.1	6.1
Cooked meat	1.4	89.7	20.7	13.8	17.2	10.3	3.4
Pie or samosa	0.8	81.3	31.3	6.3	62.5	12.5	6.3
Tinned fruit	0.8	75.0	31.3	18.8	31.3	18.8	-
Cooked fish	0.7	73.3	26.7	13.3	40.0	6.7	-
Tinned meat	0.5	70.0	10.0	30.0	10.0	-	-

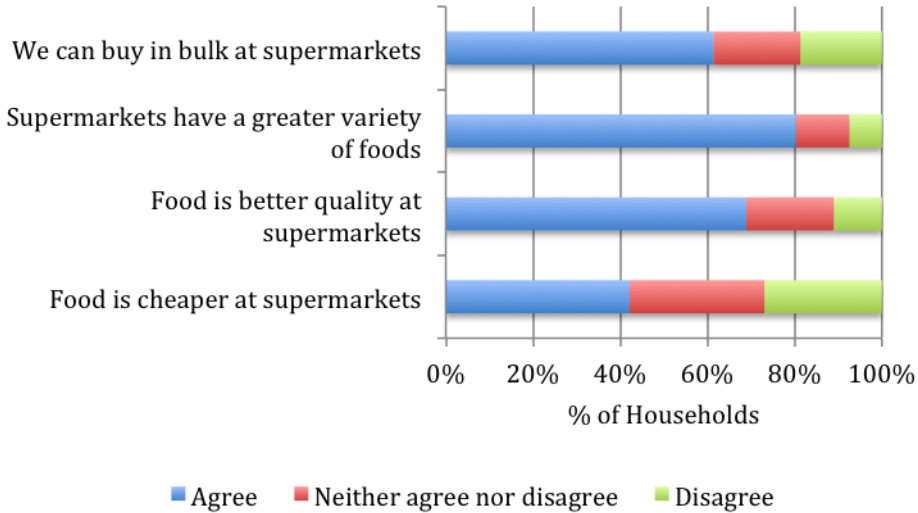
6.3 Supermarketization in Maputo

The growth in the number of supermarkets in African cities has led to the argument that the continent is undergoing a supermarket revolution. In Southern Africa in particular, this revolution appears to be further advanced than in other parts of the continent (Nickanor et al 2017). In Maputo, just over 30% of households patronize supermarkets, which is relatively low compared to other cities in the region (Crush and Frayne 2018). While some households purchase every food item in the HCFPM at supermarkets, there are only a few products (primarily processed foods) where supermarkets are the main source.

The survey captures consumer attitudes towards supermarket use by asking those who shop there at least once per month their reasons. Those who do not patronize supermarkets were also asked for their reasons. Those who shop at supermarkets said that the main reasons for patronage are greater variety of foods (80%) and that the food is of better quality (69%) (Figure 27). A majority (62%)

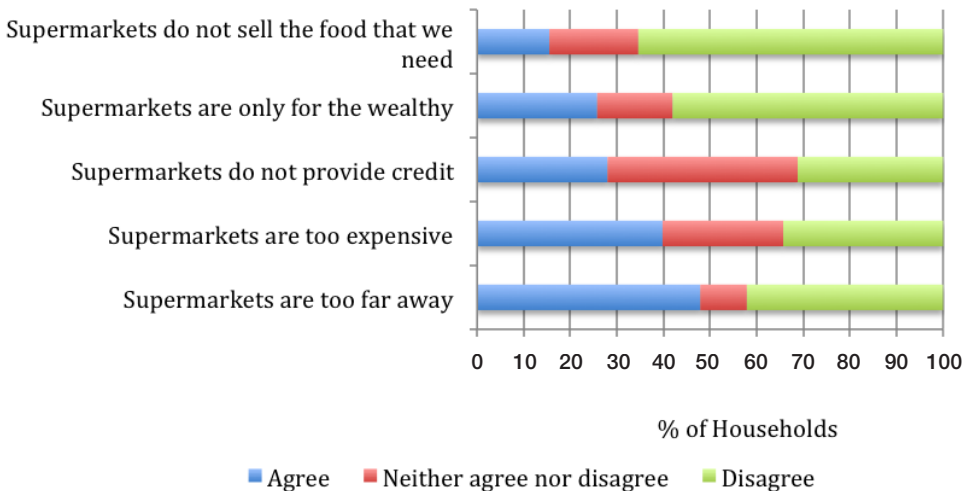
agreed that supermarkets offer the opportunity to buy goods in bulk. The lowest level of agreement (42%) was that cheaper food prices motivate supermarket use.

FIGURE 27: Perceptions of Supermarkets Among Patrons



Among the households that do not buy food from supermarkets, the most important reason was distance, with 48% agreeing that supermarkets are too far away (Figure 28). Another common reason is that food is seen as more expensive at supermarkets (40%). A smaller number, 28%, said that they do not shop at supermarkets because supermarkets do not provide credit. Despite the common perception that goods sold in supermarkets are expensive and that supermarkets are usually located in wealthy neighbourhoods, only 26% believe that supermarkets are only for the wealthy.

FIGURE 28: Perceptions of Supermarkets Among Non-Patrons



6.4 Urban Agriculture

Urban agriculture can generally be divided into two components: growing crops and keeping livestock. About one in five households (18%) produce food crops in the city. Of these, the largest number (42%) farm on “other urban land,” referring largely to open spaces in the city (Table 10). A slightly lower percentage (39%) grow food on their own housing plots.

TABLE 10: Urban Agriculture Locations

Urban agriculture plot locations	No.	% of households	% of urban agriculture farmers
Other urban land	151	7.3	41.6
On own housing plot	140	6.8	38.6
Within residential area, but outside own plot	50	2.4	13.8
On riverbed	19	0.9	5.2
Urban forest	8	0.4	2.2
On roadside	7	0.3	1.9
On industrial site	7	0.3	1.9
Hanging garden	6	0.3	1.7

The most common crops are vegetables, which are produced by 72% of households engaged in food production (Table 11). About one-fifth (22%) of food-producing households produce maize and 1% produce fruit. One in 10 produce other crops.

TABLE 11: Crops Produced by Urban Households

Crops	No.	% of sample	% of urban agriculture farmers
Vegetables (including herbs)	262	12.7	72.0
Maize	79	3.8	21.7
Other	36	1.7	9.9
Fruit	5	0.2	1.4

A slightly higher percentage of households (18%) keep livestock (Table 12). This figure includes households that produce crops and also keep livestock for food. Chickens are the most popular urban livestock (two-thirds of all households that keep livestock). While few households keep goats, pigs and cows, around a quarter keep other animals including ducks.

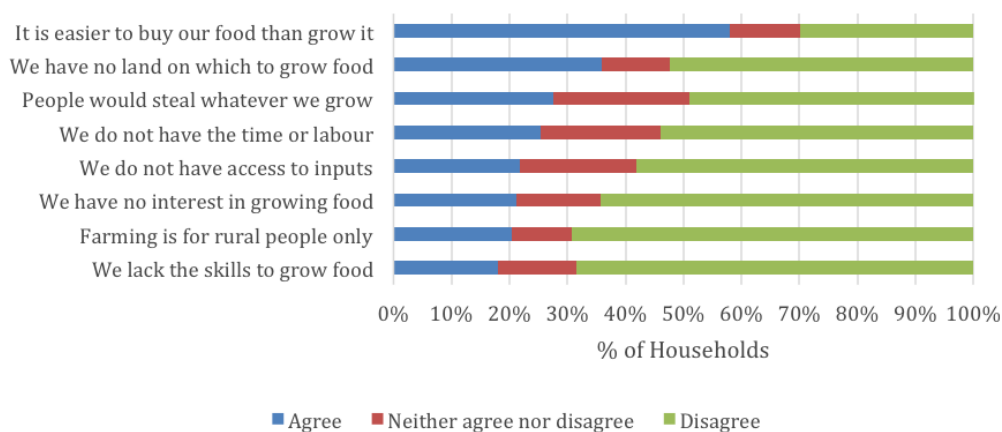
Given that four in five households in Maputo do not appear to practise urban agriculture, it is important to establish what factors inhibit the practice. Most households that do not practise urban agriculture (58%) said that they find it easier to buy food than to grow it. A sizeable proportion (36%) agreed that they have no land on which to grow food. About one in four (28%) agreed that people

would steal whatever they grow and 25% do not have time to engage in the activity. Around one in five said that they lack access to inputs, have no interest in growing food, regard agriculture as a rural activity, and do not possess the skills to grow food (Figure 29).

TABLE 12: Animals Raised for Food by Urban Households

	No.	% of households	% of livestock owners
Chickens	250	12.1	67
Goats	16	0.8	4.3
Pigs	13	0.6	3.5
Cows	7	0.3	1.9
Sheep	1	<0.1	0.3
Other	98	4.7	26.3

FIGURE 29: Urban Agriculture Perceptions Among Non-Practitioners



There does not appear to be a clear relationship between urban agriculture engagement and household income. The rates of household engagement in urban agriculture do not vary consistently across income quintiles (Table 13).

TABLE 13: Urban Agriculture Engagement by Household Income

Income quintiles	% Yes	% No
1	15.1%	84.9%
2	18.0%	82.0%
3	14.7%	85.3%
4	15.4%	84.6%
5	12.6%	87.4%

7. CONCLUSION

The Hungry Cities Partnership aims to promote inclusive growth in urban food systems in Maputo and other cities of the Global South. The production of new empirical knowledge about the levels of household food security and the various facets of the urban food system is a core component of this effort. The Maputo survey findings demonstrate the importance of the informal economy for food security, both in terms of informal sources of household income and informal food sources. Markets housing independent vendors are a ubiquitous food source used by over 90% of households, and more than a quarter of households purchase food from street sellers. As a critical source of food and livelihoods in Maputo, market- and street-based informal vending should be given the municipal support it needs for its operations, particularly in the form of access to infrastructure services, tenure and licensing. These policy implications, along with issues of basic infrastructure, nutrition, and urban agriculture, will be the subject of future HCP reports.

8. REFERENCES

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The Hungry Cities Partnership aims to promote inclusive growth in urban food systems in Maputo and other cities of the Global South. The production of new empirical knowledge about the levels of household food security and the various facets of the urban food system is a core component of this effort. This report presents and analyses findings from a city-wide survey of 2,071 households that found that most Maputo households are food insecure and that more than a third can be categorized as severely food insecure. Dietary diversity in the city is extremely low and almost half of households had gone without food due to price increases in the six months prior to the survey. The findings demonstrate the importance of the informal economy for food security, both in terms of informal sources of household income and informal food sources. The survey results also suggest a sharp divide in food security status between households in the formal and informal areas of Maputo. Given the differences in infrastructure access between the formal and informal areas of the city, and the close relationship between infrastructure access and food insecurity in Maputo, the informal/formal divide may be a physical manifestation of severe inequality across multiple deprivations in the city. The report recommends that informal vending be given the support it needs for its operations, as it is a critical source of food and livelihoods in Maputo.

