

# Results of the Market Information and Food Insecurity Response Analysis (MIFIRA) Framework Conducted in Two Locations in Kenya\*

Hope Michelson<sup>a</sup>, Mitchell Morey<sup>b</sup>, and Laura Cramer<sup>c</sup>

## 1. Introduction

International development agencies working in contexts of chronic or acute food insecurity have begun to explore the possibilities of replacing or supplementing food aid with cash or vouchers. The Market Information and Food Insecurity Response Analysis (MIFIRA) tool is a framework to evaluate the feasibility of these options given market conditions and household circumstances and preferences. For example, the efficacy of cash or voucher transfers requires a well-functioning private market capable of supplying goods to aid recipients without significant price increases. Constrained supply chains or collusive traders may contribute to adverse effects for both recipients and non-participants, driving prices up and reducing the purchasing power of local populations.

MIFIRA is organized around two primary questions. First, are local markets functioning well? Second, if markets are not functioning well enough to supply aid, is there sufficient food available nearby to meet the shortfall? Each primary MIFIRA question is subdivided into a set of specific questions to focus and facilitate analysis. The functioning of local markets is considered in five dimensions: to what degree food insecure households are connected to markets, what is the estimate of increased demand on food markets generated by the program, whether local traders are able to meet such an increase without increasing food prices, whether there is sufficient competition among traders in local markets, and whether households have a preference over the form of aid. The second primary MIFIRA question examines the potential effect of agency food purchases on source markets. Kenya is a food deficit country and therefore an unlikely candidate market for procurement. This study therefore focuses on the question of recipient market functioning, leaving aside the analysis of source markets.

This research is collaboration between a Cornell University (CU) research team and Catholic Relief Services (CRS) of Kenya. We apply the MIFIRA framework to one urban and one rural site in Kenya. The locations are characterized by distinct market systems and populations with different livelihoods. Mathare is the oldest slum in Nairobi and its ten densely populated villages are home to between 500,000 and 800,000 people who largely engage in casual labor and informal sector business activities. The second research site, Makueni District in Eastern Province, has experienced several

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<sup>a</sup> Contact: hcm23@cornell.edu

<sup>b</sup> Contact: mitchell.morey@gmail.com

<sup>c</sup> Contact: cramer\_laurak@yahoo.com

consecutive years of severe drought, a significant challenge to household food security in a region where most families depend on agriculture and livestock production to meet consumption needs.

Given the strong household and market contrasts between the two locations, we present the site analyses separately. Section Two discusses the differences between urban and rural food security, Section Three describes the Mathare household and trader samples and presents the Mathare MIFIRA results. Section Four describes the samples for Makueni and presents the Makueni analysis. Section Five concludes.

## **2. Comparison of Urban and Rural Dimensions of Food Security**

This report uses the definition of food security from The State of Food Insecurity in the World 2009: “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (p. 8). The three components of food security are food availability, food access, and food utilization.

Food security differs between urban and rural areas due to differences in livelihoods, degree of reliance on purchased foods, diversity and safety of available food, and access to markets. In urban areas, food availability is rarely a source of food insecurity because food flows in from rural areas and abroad. In rural areas food production from local farms constitutes a much larger proportion of household diets and production shortfalls can lead to both food scarcity and limited household purchasing power through reduced income from agriculture.

Access to food for poor households in both urban and rural areas is limited by incomes earned. In urban areas, the poor often pay more per unit than their wealthier counterparts for food because they buy in smaller quantities from neighborhood shops that have higher prices (Kennedy 2003). Moreover, due to a greater reliance on cash income and limited access to land for agricultural production, the urban poor are in many ways more vulnerable to food and fuel price shocks than those in rural areas (Ruel et al. 2010).

Food utilization in both urban and rural areas is affected by households’ strategies to cope with increased food prices<sup>1</sup>, including reduced dietary diversity, reduced diet quality, and increased consumption of street foods. Such coping mechanisms may lead to increased malnutrition and micronutrient deficiencies and stunting in children (Ruel et al. 2010).

Some patterns of food utilization distinguish rural from urban areas. Households in urban areas consume more processed and prepared foods than in rural areas. Street foods are popular because they are readily available, convenient, and relatively inexpensive, but the sometimes unsanitary conditions in which these foods are prepared can lead to illness. Such illness, coupled with higher

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<sup>1</sup> While an Oxfam report shows an increase in prices of staple food commodities between December 2007 and December 2008, more recent figures from the Kenya National Bureau of Statistics demonstrate a slight easing in food prices from April 2009 to April 2010 (see Figure 1).

rates of HIV infection among slum residents, can lead to poor absorption of food within the body. High infection rates of HIV in urban slums also effects food utilization, as HIV infection increases an infected individual’s dietary requirements (Oxfam et al. 2009). HIV infection rates for Mathare are not available, but estimates place at above 25-30% (MSF 2006).

Finally, dietary transitions in urban areas have increased households’ consumption of processed foods. Processed foods are generally lower in micronutrients, leading to micronutrient deficiencies of that can affect the health of adults and the long-term growth and development of children (Ruel et al. 2010).

### 3. Mathare Food Security and Survey Results

Over 60% of Nairobi’s population of approximately four million people lives in slums (UN-Habitat 2006). Mathare is one of Nairobi’s most densely inhabited slums, with an estimated population of at least 500,000 living in an area 2 kilometers by 300 meters. Mathare is located in Nairobi’s Starehe constituency, an area in which 44% of the population is below the poverty line (CBS et al. 2005).

While detailed data is not readily available to conduct a complete analysis of food insecurity in Mathare, existing research suggests that slum residents face significant challenges to secure adequate food to meet daily requirements. According to the Kenya Food Security Steering Group, at least 3.5 million urban dwellers in Kenyan cities have difficulty meeting their food needs on a regular basis (KFSSG 2010). A report by Oxfam GB, Concern Worldwide, and CARE International in Kenya in April 2009 identified the beginning of a food security crisis emerging in the urban slums of Kenya, triggered by supply disruptions caused by post-election violence in early 2008, the food price crisis of the same year, and falling real incomes (Oxfam et al. 2009).

#### *3A. Sampling Strategy for Mathare Voucher Recipients and Non-recipients*

The Mathare sub-location consists of ten villages, all of which are served by Catholic Relief Services’ food for work voucher program. We selected three villages with varying access to the primary commercial streets and markets in Eastleigh: Kosovo, Mlango Kubwa, and Village 3A/B. These villages also covered the range of village types; Kosovo originated as a government-planned settlement while the Mlango Kubwa and Village 3 formed as unplanned settlements. The majority of respondents lived in Mlango Kubwa or Kosovo; in these villages we surveyed between 30 and 40 respondents, split between voucher recipients and non-recipients. Because we wanted to increase the number of highly food insecure households we added a sample of fifteen non-recipients in Villages 3A and 3B.

**Table 1: Number of Mathare Respondents by Beneficiary Status and Village Residency**

	<b>Beneficiaries</b>	<b>Non-Beneficiaries</b>	<b>Total</b>
Kosovo	15	20	35
Mlango Kubwa	15	18	33
Village 3A/B	0	15	15

<b>Total</b>	<b>30</b>	<b>53</b>	<b>83</b>
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A list of Mathare CRS program participants served as our sampling frame for recipients. We randomly drew fifteen names from the list for Kosovo and Mlango Kubwa and surveyed selected individuals when they arrived to collect their final voucher installment.

In order to obtain a random sample of non-recipients, we employed a transect strategy in all three villages. We were conscientious of the fact that there might exist systematic differences in income and livelihoods between houses on a primary path and those on a side alley and tried to sample representatively from each. Our method was to enter the village along the primary dirt path and to sample the inhabitants of every fifth house we passed, entering into side alleys that intersected the main path. In selecting households, we attempted to exclude those who were not food insecure and surveys were terminated if it became clear that the respondent was food secure.

### ***3B. Food Security in Mathare***

Although food is readily available in the markets used by urban slum residents, food access and utilization prove difficult for many people. Food access depends mainly on cash because Mathare residents have little ability to cultivate their own crops and therefore obtain almost all of their food from the market. The sources of household incomes in slums come mainly from jobs in the formal or informal sector. In the CRS-CU survey, respondent households relied on the main economic activities listed in Table 2.

**Table 2: Main Economic Activities in Mathare, by % of Household Heads**

	<b>Male (41)</b>	<b>Female (42)</b>
Dependent or housework	-	14.3
Casual labor	9.8	45.2
Own shop or business	73.1	9.5
Petty trading	12.2	31.0
Wage/salaried employment	4.9	-
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

In Mathare, there is little of the cyclical seasonal variation in employment that characterizes rural areas. Instead, reliability of incomes is idiosyncratic at the household level. The 2009 KFSSG Short Rains Assessment Report estimated that the mean daily household income in Mathare was KSh 237. The average daily income in the July 2010 CRS-CU research was KSh 72. Because we were purposively sampling food insecure households, our average household income figure is lower than the KFSSG report. Survey respondents were asked to estimate average daily income for the entire household, which may have resulted in an underestimation if respondents were unaware of all household income sources or if gifts or other transfers were not recalled. Our research identified a significant difference in the mean income of male versus female-headed households: Ksh 96 for male-headed households and Ksh 50 for female-headed households, a statistically significant difference at the 1% level.

The April 2009 Oxfam, Concern Worldwide and CARE report found that real incomes in Nairobi's slums declined an average of 21% between December 2007 and December 2008. Declining earnings can be expected to significantly affect household food access in Mathare; surveyed households in the settlement spent an average of 71.6% of their reported daily income on food, as shown in Table 3. Table 3 also presents the share of household daily income spent on food, by income bracket.<sup>2</sup> Households with higher per capita daily earnings spent a smaller proportion of their income on food while households with lower per capita daily incomes spent a higher proportion on food but spent less per capita on daily food expenditures.

**Table 3: Share of Household Daily Income Spent on Food in Mathare, by Income Bracket**

	<i>n</i>	Mean	Min	Max
Less than Ksh 50/day	2	100	100	100
Ksh 50 – 100/day	11	95.8	80	100
Ksh 101 – 200/day	35	76	32.5	100
Ksh 201 – 300/day	18	58.3	19.3	100
Ksh 301 – 400/day	6	60.8	35.4	94.5
Ksh 401 – 500/day	6	61.3	36.8	86.4
Over Ksh 501/day	4	42.9	29.2	56.2
<b>Total Mathare sample</b>		<b>71.6</b>	<b>19.3</b>	<b>100</b>

Table 4 presents the mean per capita food expenditure in Mathare disaggregated by household daily income bracket and suggests that a share of the respondent households may be not merely food insecure, but food poor, that is, unable to purchase the minimum amount of basic food needed to meet the minimum daily requirement of 2,250 calories per adult. According to the Kenya Food Security Steering Group 2008 report on impacts of rising food prices on livelihood groups in Kenya, the June 2008 threshold for food poverty in Kenya was Ksh 47.7 (KFSSG 2008) per capita expenditure on food. Using the June 2008 food poverty threshold, at least 16% (13 of 82) of surveyed households could be classified as food poor<sup>3</sup>.

**Table 4: Average per Capita Food Expenditure in Mathare, by Income Bracket**

	<i>n</i>	Mean	Min	Max
Less than Ksh 50/day	2	22.6	16.8	28.5
Ksh 50 – 100/day	11	43.2	18.0	137.1
Ksh 101 – 200/day	35	50.0	15.2	135.0
Ksh 201 – 300/day	18	56.6	25.1	122.3
Ksh 301 – 400/day	6	54.4	20.3	126.0
Ksh 401 – 500/day	6	62.3	40.0	86.4
Over Ksh 501/day	4	74.0	29.2	112.5

<sup>2</sup> The per capita food expenditures reported in Table 3 do not include calculations of any food gifts or food aid received. Households spending greater than 100 percent of their daily-earned income on food may be relying on gifts, food aid, remittances, loans, or credit to pay for food. The income data collected may also not have been complete, which would cause the percentage of income spent on food to be higher than the actual figure.

<sup>3</sup> The food poverty threshold is likely to be higher than KSh 47.7 now because of inflation since 2008, however the Kenya National Bureau of Statistics changed its method of calculating the Consumer Price Index (CPI) in February 2009 and updating the food poverty line using two different CPI numbers is beyond the capacity of this research team.

### ***3C. Market Access and Participation of Food Insecure Households in Mathare***

#### **MIFIRA question 1a: Are food insecure household connected to local markets?**

Households in Mathare rely almost exclusively on market purchases to obtain their needed food items. Within the 10 villages that compose the community, many small shops, known as kiosks, are located along the central lanes. Kiosks sell food staples including rice, packaged maize flour, cooking fat, oil, sugar and salt, along with non-food household items such as soap and paraffin. Kiosks sell in small volumes and are a primary source of credit for food in Mathare. Both Kosovo and Mlango Kubwa, have at least 30 kiosks. A handful of small cereals shops dealing exclusively in bulk pulses, rice, maize grain, and bulk maize meal are located throughout Mathare. There are six such cereals shops in Kosovo and a significant number in the upper part of Mlango Kubwa close to Juja Road. In Kosovo and Mlango Kubwa there are four and one maize meal mills, respectively, where residents can either purchase grain from the mill owner to be ground or bring their own maize grain for grinding into maize meal. Mlango Kubwa is also home to three small supermarkets that sell a wider range of commodities than the kiosks. Eastleigh, the community located across Juja Road from Mlango Kubwa, is the site of more small supermarkets, cereals shops and maize meal mills.

Twenty-three percent of survey respondents reported purchasing food from a source other than a kiosk, Mathare supermarket or maize meal mill. These respondents reported their households were purchasing from a seller of fresh vegetables in the community or traveling to an open-air market, such as Gikomba, to purchase food items.

Most households in Mathare reported purchasing food on a daily basis, with most purchases occurring at a kiosk close to their home. The mean monthly frequency of kiosk visits was 36 per household and total market visits per household (kiosks, maize meal mills, supermarkets and open air markets) was an average of 45 per month. Households spend an average time of less than seven minutes to reach a kiosk, 18 minutes to a maize meal mill, and 28 minutes to a Mathare supermarket. The maximum travel time to a kiosk or maize meal mill was reported as one hour and the maximum time to reach a Mathare supermarket was reported as two hours. Because household income can vary from day to day, many households receive food on credit from one or more kiosks. Among survey respondents, 83.1% reported their households had used credit for food in the past two weeks. From among the 83 households surveyed, 27.7% reported only one member going to markets. It is unclear whether another member could take over the responsibility of purchasing food if the only member going to markets fell ill or for some other reason could not physically access markets.

Regarding physical constraints to markets, 16.9% of respondents reported at least one member of the household with limited physical access to markets. The primary reason was lack of safety and security and followed by illness. Other responses included lack of transportation, disability, and insufficient time. Ethnicity, age, and culture/custom were reported as constraints to accessing markets by one respondent each.

The high frequency of market visits per household per month and the short average time to reach the market indicate that the response to MIFIRA question 1a is yes, food insecure households are well connected to local markets. Though we find a small number of households in which one or more members face a physical constraint to accessing a preferred market, food insecurity in Mathare is predominantly due to insufficient or unstable cash flows for food purchases rather than a lack of commodity availability of or a physical inability to reach markets.

**MIFIRA question 1b: How will local demand respond to transfers?**

To assess how local demand might respond to transfers, the survey team asked respondents how they would spend a one-time cash transfer. Responses were used to calculate households’ marginal propensity to consume (MPC) food, which is used to estimate the additional market demand for food that would be generated by a cash transfer program. In Mathare, the residents have a range of consumption needs beyond just food and many respondents answered that, in addition to food expenditure, they would use the cash transfer to pay rent, pay school fees, or invest in a small business. The mean MPC for food in Mathare is 0.32 with a standard deviation of 0.29. In Table 5 we use the mean and one standard deviation above the mean as a mean and upper bounds to calculate the range in increased food demand generated by a one-time KSh 1,000 cash transfer to 2,500 recipients in Mathare (a ten-fold increase in the 2010 size of CRS’s Mathare voucher program). The total amount of induced demand if the vouchers were restricted to food is shown in the far right column.

**Table 5: Additional Demand for Food Generated by a KSh 1,000 Disbursement**

# of Recipient Households	Mean Food MPC	High Estimate, Food MPC	Mean Estimated Transfer-Induced Demand	High Estimated Transfer-Induced Demand	100% of Transfer
2,500	.32	.61	KSh 800,000.	KSh 1,525,000	KSh 2,500,000

**MIFIRA question 1c: How much additional food can local traders supply at or near current costs?**

Mathare is a diverse market system with multiple vendors and retail types. Vendors supplying staple food into kiosks, maize meal mills and small supermarkets operating in the Mathare area are similarly diverse: traders in Eastleigh, industrial maize meal millers in Thika, wholesalers in Nyamakima.

Table 6 presents the distribution of surveyed vendors in the Mathare marketshed. The N column indicates how many traders of a given type were identified and n indicates how many were surveyed. In a few cases, the small number of vendors of a particular type (maize meal mills, for example) allowed us to interview the full local population (N). In cases where this was not possible, including kiosks in Mlango Kubwa and Kosovo, we used a similar transect strategy for surveying kiosk

traders--choosing kiosks largely at random but with some attention relative kiosk size and product mix. Because we were focusing on multiple staple foods, we split the surveys within vendor types among packaged maize flour, locally milled maize meal, and pulses.

**Table 6: Distribution of Supplier Population and Suppliers Surveyed in Mathare**

Location	Village	Small supermarkets		Maize meal mills		Cereals shops		Kiosk retailers	
		n	N	n	N	n	N	n	N
Mathare	Kosovo	-	0	4	4	2	6	4	30
Mathare	Mlango Kubwa	3	3	1	1	0	> 10	4	30
Eastleigh	-	3	> 10	-	0	1	> 10	-	-

A majority of the retailers in Mathare procured their supplies from wholesalers and small supermarkets in the nearby area of Eastleigh. We surveyed three small supermarkets in Eastleigh and three in Mlango Kubwa. We included both small supermarkets that had and had not participated as vendors in the CRS voucher program. Eastleigh wholesalers supply both small supermarkets and Mathare kiosks with products including packaged maize meal, cooking oil, and sugar but were unwilling to participate in the survey.

A final major source of cereals and bulk maize meal into Mathare is the Nyamakima wholesale cereals market close to Nairobi's central business district. In addition to the traders surveyed in Table 6, we interviewed five cereals wholesalers in Nyamakima again using a transect method to randomly select the wholesalers. We also sought out and interviewed out the largest cereals wholesaler in the market.

The large number of kiosks and cereals shops in operation in Mathare is likely to spread increases in demand over enough vendors that the per-vendor increase is manageable. Table 7 evaluates the mean per kiosk demand increase generated by a hypothetical cash disbursement program targeting 2,500 households with a per-household allotment of KSh 1,000. Assuming 30 kiosks per village and our upper bound on the Mathare MPC calculation, the program could be expected to generate a per-tranche increase in demand of approximately KSh 5,083 per kiosk. Five thousand shillings is the equivalent of 3-4 bags of maize grain (July, 2010 prices) or 6-7 bales of packaged maize flour. These quantities fall well within the range of kiosk owners' own estimated short-term sourcing capacity.

Our data on vendor operations in Mathare are not adequate to permit the estimation of the excess capacity of the Mathare marketshed but our calculations in Table 8 clearly support kiosk and small supermarkets' abilities to meet demand resulting from a ten-fold scale up in the number of project recipients in Mathare.



**Table 7: Suppliers' Restocking Frequency, Credit Access and Credit Supply, and Mean Margins**

	<b>Small Supermarkets (n=3)</b>	<b>Maize Meal Mills (n=5)</b>	<b>Cereals Shops (n=2)</b>	<b>Kiosk Retailers (n=8)</b>
Mean freq. of restocking (per month)	11.7	5	9	13.5
Percent receiving credit in the last five years from suppliers	100%	100%	100%	0
Percent giving credit to their buyers	0%	67%	50%	87.5%
Mean total outstanding credit, 7/2010	KSh 0	KSh 12,000	KSh 3,500	KSh 5,525
Percent of new entrants in previous five years	30%	75%	100%	25%
Mean margin, July 2010 as percent of trader purchase price	8.9%	31%	34%	16.3%

**Table 8: Mathare per Vendor Simulated Demand Increase, Small supermarkets and Kiosks**

<b>Number of Beneficiary HHs</b>	<b>Per HH allocation</b>	<b>Calculated MPC for food</b>	<b>Kiosks (N=300)</b>	<b>Supermarkets (N=10)</b>
2,500	KSh 1,000	0.61	KSh 5,083	KSh 150,000

**MIFIRA question 1d: Do local food traders behave competitively?**

The presence of more than 30 kiosks in each village is evidence of a potential for strong competition in the retail sector within Mathare as are the small margins separating vendors' mean sales and purchase prices. However, the fact that kiosks source supply nearly every other day (Table 7) and do not use or have access to supplier credit suggests that kiosks may be operating close to maximum current capacity. Moreover, there was minimal entry in the last five years among surveyed kiosk owners, likely due to the fact that there is little outside starting capital available to new entrants.

**MIFIRA question 1e: Do food insecure households have a preference over the form/mix of aid they receive?**

In addition to eliciting how a respondent would spend a cash transfer, the survey team also asked respondents which form of aid they would prefer if given a choice between cash, food aid, vouchers, or a mix of these. The percentage of Mathare respondents choosing each type of aid is shown in Table 9 below.

**Table 9: Aid Preferences in Mathare**

<b>Cash</b>	<b>Food</b>	<b>Voucher</b>	<b>Mix</b>
23.2%	17.1%	17.1%	42.7%

Among Mathare survey respondents who preferred a mix of forms of aid as their desired distribution, cash and vouchers were strongly preferred over other combinations (Table 10). Moreover, more than 97% of respondents who preferred a mix wanted the mix to include cash.

**Table 10: Distribution of Preferences among Those Wanting Mix in Mathare**

<b>Cash/Voucher</b>	<b>Cash/Food</b>	<b>Food/Voucher</b>	<b>All 3</b>
64.7%	20.6%	2.9%	11.8%

Table 11 presents the correlation between having been a CRS voucher recipient and preferred form of aid. A positive relationship seems to exist between having been in the CRS voucher program and stating a preference for a mix of aid forms over a distribution that involves only one type of aid. This correlation could be a result of prior experience through the CRS program with vouchers or it could be an artifact of CRS targeting criteria.

**Table 11: Correlation-Aid Preference and CRS Voucher Beneficiary**

<b>Cash</b>	<b>Food</b>	<b>Vouchers</b>	<b>Mix</b>
-0.12	-0.21	-0.14	0.37

## 4. Makueni Sampling Strategy, Food Security Situation and Survey Results

### 4A. Sampling Strategy for Beneficiaries, Non-recipients, and Traders

Makueni is an expansive region (7,966 km<sup>2</sup>), with a variety of livelihood zones. It is a very different environment from Mathare and presented a different set of challenges with respect to sampling. Makueni is a primarily rural district with a few larger towns throughout. Our surveys almost entirely focused on small towns and the people living in the outlying areas. We again sampled from both voucher recipients and non-recipients. The villages that we sampled were selected by CRS's local partners for their accessibility and for the ability to identify voucher recipients and non-recipients. In general, we surveyed two sub-locations per location each day, for a total of 13 different sub-locations (see Table 12).

**Table 12: Survey Respondents by Location and Beneficiary Status**

<b>Sub-location</b>	<b>Beneficiaries</b>	<b>Non-Beneficiaries</b>	<b>Total</b>
Kwakavisi	5	7	12
Kalii	3	5	8
Mavindini	2	5	7
Kiangini	1	3	4
Kithuki	2	2	4
Katithi	2	2	4
Kituluini	1	2	3
Mbuvo	1	1	2
Ndungo	2	0	2
Others	1	2	3
<b>Total</b>	<b>20</b>	<b>31</b>	<b>51</b>

When we arrived at a town we intended to sample, we would start in the market center and send survey teams in each direction along the road passing through town. Each team would follow the transect strategy systematically selecting a recipient household and a non-recipient household. In a few instances, we would arrive at a randomly selected house and find that the structure indicated the owner to be wealthy. In those cases, we would consult with our community liaison. If they determined the household was likely wealthy enough that they would be food secure, we continued our transect strategy until we found a more appropriate survey respondent. Depending on time constraints, a team would continue the process by travelling further down the road until a different pair of recipients/non-recipients could be identified.

In addition to the random transect surveys, we also conducted focus group discussions (FGDs) in two communities, Kalii and Kwakavisi. In each instance, community members came to a predetermined location in numbers greater than our desired focus group number of 12 people. Both times, we randomly selected participants for the focus group and others to answer an abbreviated household survey. The focus group and shortened survey questions were devised such that they complemented each other well and provided a full picture of the community's food security

situation. In Kali, six women and five men participated in the FGD, and in Kwakavisi the group was composed of nine women and three men.

Our trader interviews took on a very different structure in Makueni compared to the structure of trader interviews in Mathare. In Makueni, we asked traders about both maize grain and pulses but not maize meal. Posho mills were used to mill own-produced or purchased maize grain, but did not sell maize meal, and were therefore not interviewed. The structure of the towns in Makueni is such that any wholesalers or retailers of significant size are located in the town center. Therefore, when we arrived in a town, one survey team would interview as many cereal traders as possible given time constraints. By interviewing the trader about both maize grain and pulses, we were able to obtain a more holistic view of the traders' operations. Both small cereal/pulses dealers and large cereal/pulses dealers were included in this sample to capture supply issues at each level of the distribution chain.

In addition to the surveys conducted in the city centers, we also surveyed traders located in the larger cities of the Makueni District since they not only represented a different type of market for food products but also would often be the source of goods for smaller vendors in the more rural areas. These traders in the larger cities also act as buyers of locally grown crops during the harvest season. We surveyed a collection of cereals and pulses dealers to establish the intermediate link between large distributors in Kenya's biggest cities and the smaller wholesalers and retailers in Makueni District.

#### ***4B. Food Security in Makueni and Aid Agency Responses***

Makueni District is located in Eastern Province and is classified as a marginal agricultural area. In 2005, the population of the district was 887,000, with a growth rate of 2.8% (KFSSG 2007). It has a 66% poverty incidence and is ranked 178<sup>th</sup> out of 210 constituencies in level of poverty (CBS et al. 2005). According to the KFSSG (2010), crop production in the area accounts for 40% of household income, followed by 35% of income from livestock production and 25% from employment. Average land holdings are 2.5 acres for smallholder farmers and 20 acres for large-scale farmers (KFSSG 2007).

Makueni is a food deficit area, having produced approximately 11,480 MT of food in 2005 compared to 127,720 MT of food demand. Limited rainfall and repeated poor harvest or complete crop failures compound this problem. The main factors affecting food security in Makueni and other districts in the marginal agricultural area of Eastern Province are lack of, or poorly organized, agricultural marketing systems, high post harvest losses, limited crop diversification and inappropriate planting of maize where sorghum would perform better, inadequate and unreliable rains, environmental degradation and poor transportation infrastructure (KFSSG 2010 and KFSSG 2007). In contrast to urban areas, where over 90% of food comes from markets, 59% of food in the marginal agricultural areas of Kenya comes from market purchases, 37% is own-farm produce, 1% is obtained through hunting and gathering, and 2% from gifts and food aid. When examining sources

of maize, 38% comes from own-farm production, 51% comes from market purchases and 10% is a result of gifts and food aid (KFSSG 2008).

The main economic activities of household heads reported by respondents in the CRS-CU survey are shown in Table 13 below. It is worth noting that there are fewer female-headed households in Makueni than were found in Mathare. Of the respondents surveyed in Makueni who were not household heads, 71.4% were females engaged in own-farm agricultural or livestock production. This follows other findings that women contribute a great majority (60 – 80%) of agricultural labor in Sub-Saharan Africa (Dao, 2004). Another key characteristic of labor patterns in the marginal agricultural areas is the outmigration of almost 20% of household members to urban areas, tourism hotspots, and high potential agricultural zones (KFSSG 2008). These members then send home remittances that contribute to the household income. The research team attempted to capture the income from remittances for the surveyed households.

**Table 13: Main Economic Activities in Makueni, by % of Household Heads**

	<b>Male (39)</b>	<b>Female (12)</b>
Dependent or housework	2.6	-
Livestock production	7.7	16.7
Casual labor	5.1	8.3
Own shop or business	53.9	-
Rainfed crop production	25.6	75.0
Other	5.1	-
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

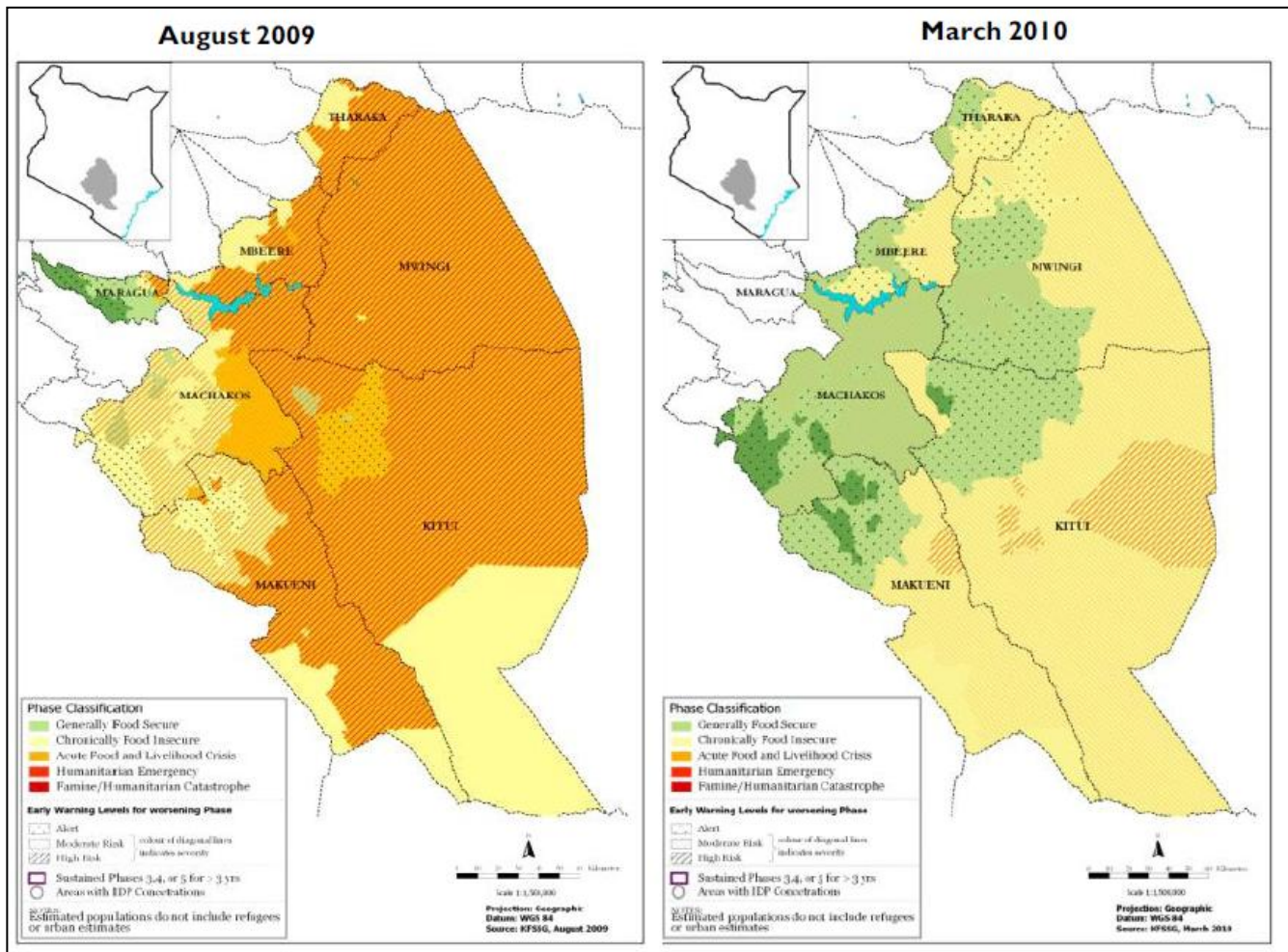
Within the study conducted by CRS and Cornell University, the data collected did not allow for computation of whether households are net buyers or net sellers of food. The information collected does reveal that every household surveyed grows at least one staple crop.<sup>4</sup> The maize harvest lasts an average of 4.3 months for the households surveyed while the pulse crops last 5.4 months on average. In the month prior to the survey, 29% of households purchased most or all of their maize consumption from the market. The average land size cultivated by the responding households was four acres.

The food security situation in the area improved from the long dry season in 2009 to the end of the short rains in March 2010 (see Figure 2) as a result of good rainfall and above average crop production. However, parts of eastern Makueni district is still at high risk of returning to a food crisis. The nutrition status of children under age five improved in the Eastern marginal agricultural area following favorable the short rains harvest in early 2010 with the rate in Makueni district hovering around 16% of children with a mid-upper arm circumference of less than 13.5cm (KFSSG 2010).

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<sup>4</sup> Staple crops included in the survey were maize, millet, sorghum, beans, and pulses (cowpeas, pigeon peas, dolichos, and green grams)

Figure 2: Food Security in the Eastern Marginal Agricultural Area



Source: KFSSG 2010

One of CRS' responses to food insecurity in Makueni has been a food voucher for work program that requires participants to work in groups to construct trenches on their farms for soil and water conservation. The recipients are eligible to participate in 10 days of work per month for 150 shillings per day, with the program scheduled to run for three months. Two thousand five hundred recipients are participating in the program. Other organizations are also implementing projects in Makueni aimed at improving food security. Both World Vision and the Kenya Red Cross distributed relief food during the prolonged drought to assist families in need. The Arid Lands Resource Management Project (ALRMP) is a Government of Kenya program working with various partners to develop irrigation, increase food production and improve sustainable livelihoods in the area. The Ministry of Agriculture has also joined forces with the Kenya Agricultural Research Institute and other institutions to promote traditional crops such as sorghum as a means of boosting household food sources, among other initiatives (KFSSG 2007).

#### ***4C. Market Access and Participation of Food Insecure Households***

##### **MIFIRA question 1a: Are food insecure households connected to local markets?**

Because Makueni is an agricultural region, it is subject to wide swings of productivity in accordance with the seasons. Thus, there are times of the year when people are largely self-sufficient with respect to food production. However, there are other times of the year when peoples' harvests have been exhausted and they require access to marketed food to fill their dietary needs.

In general, the people living in Makueni have regular physical access to markets. The average frequency of visits to a *duka* (small shop) selling food is 15 times per month. The frequency at which people visit food vendors of any type is 28 times per month. This means that the average household goes to a *duka*, maize meal mill, or regional market on an almost daily basis. When broken down by the gender of the household head, there is no discernible difference between the frequency at which a female-headed household and a male-headed household are able to go to the market to purchase food commodities. As another indicator of sufficient market access, more than 85% of households have multiple members who regularly travel to a market. This essentially serves as a form of insurance against a single member becoming unable to travel to the market because another household member could go in that person's place.

**Table 14: Household Market Access Statistics in Makueni**

Avg. # of HH market visits to purchase food per month		27.9
% of HHs with more than one member going to market to purchase food		86.3
% of HHs reporting a member with limited physical access to markets		54.9
% of HHs that received food on credit in the past 2 weeks		76.5
Avg. travel time by type of vendor	Duka/ Kiosk	20 min.
	Posho mill	29 min.
	Weekly market	48 min.

More 50% of survey respondents reported that a member in their household experienced limited physical access to markets. The single most common factor inhibiting market access is other time commitments, such as land preparation or weeding, that prevent the person from having the time to go to the market. Illnesses were also a commonly reported response. The information does not distinguish between idiosyncratic illnesses that keep a person in bed for a matter of days and more chronic illnesses that constrain people for extended periods of time. The latter would represent a more significant impediment to market access since a short, irregular barrier to market access would be more easily overcome relative to a permanent illness. Also identified on several occasions were safety of travel and age as factors that reduced physical access to markets.

**Table 15: Causes of Constrained Physical Access to Markets**

	# of Times Identified
Insufficient Time	29
Illness	20
Unsafe to Travel	9
Age	8
Lack of Transport	5
Other	12

In general, food insecurity in Makueni is not a product of people’s physical inability to get to a place where they can buy the food of their choice but rather an inability to produce enough food on their cultivated land or earn the income necessary to purchase food. In the typical year, during which a harvest provides relatively little food, the harvest will provide food for autoconsumption for 2-3 months. Food insecurity is a much less significant issue during the harvest period of years that actually can support a harvest, as reported by the communities in which we conducted focus group discussions. However, when people are not able to fill their needs through autoconsumption, they would generally be able to reach food markets without major difficulties.

**MIFIRA question 1b: How will local demand respond to transfers?**

In contrast to Mathare, the marginal propensity to consume food in Makueni can be anticipated to vary according to the season in which a transfer is provided. During the 3-5 months that households’ staple harvest can meet their consumption needs, a household’s propensity to use a transfer for food purchases would likely be lower than would during the lean season. In the lean season, a greater portion of any cash or voucher transfers would likely be used to purchase food.

Based on the responses of the households surveyed, people in Makueni will, on average, spend about 52% of a cash transfer on food. In generating the upper and lower bounds for likely increased food demand, we used the mean Marginal Propensity to Consume (MPC) for food and then generated the upper bound by adding one standard deviation above the average. The table below provides calculations of estimated transfer-induced demand if a transfer of KSh 1,500 were provided to 160 recipients in a sub-location. The right-most column is the amount of demand if a KSh 1,500 voucher limited to food were distributed.

**Table 16: Additional Demand for Food Generated by a KSh 1,500 Cash Disbursement**

# of Recipient HHs in Sub-Location	Mean Food MPC	High Estimate of Food MPC	Mean Estimated Transfer-Induced Demand	High Estimated Transfer-Induced Demand	100% of Transfer (i.e., restricted food voucher)
160	.52	.81	KSh. 124,800	KSh 194,400	KSh 240,000



It should be noted that each of the recipients would be able to access a trader who would accept vouchers within their sub-location. These traders may source their products from a common market but the actual sale to the recipient would likely occur in the sub-location where the voucher was distributed. However, if all the individual sub-location demand increases are aggregated over their marketsheds, a far greater amount is demanded. There are three main primary markets, each of which serves approximately 10 sub-locations. Therefore, each of those larger market locations might face an increase of about ten times the above stated demands. The ability of traders to handle increased demand for food is discussed in Section 4D below.

**MIFIRA question 1c: How much additional food can traders supply at or near current costs?**

Makueni District includes 16 divisions, 66 locations and 187 sub-locations. Each sub-location includes many villages, the largest of which often shares the name of the sub-location and is a local market center that acts as the hub for the sub-location’s vendors who operate as both wholesalers and retailers. Outside of this larger center are smaller villages with a handful of kiosk retailers. Table 17 presents the distribution of supplier populations and suppliers surveyed in Makueni communities. The number in the N column indicates how many traders of a given type were identified in a village and the small n column indicates how many were surveyed.

**Table 17: Distribution of Supplier Population and Suppliers Surveyed in Makueni Communities**

Location	Sub-location	Village	Dedicated wholesalers		Wholesaler/retailers		Kiosk retailers	
			n	N	n	N	n	N
Nguu	Kikumini	Kikumini	-	-	0	4	0	4
Nguu	Mithumba	Masumba	-	-	2	2	2	2
Mavindini	Mavindini	Mavindini	-	-	4	7	1	5
Mavindini	Mavindini	Katithi	-	-	0	0	1	3
Kithiki	Kithiki	Kithiki	-	-	3	4	0	5
Kitise	Kitise	Kitise	-	-	2	2	0	4
Wote	Wote	Wote	2	2	2	3	-	-
Makindu	Makindu	Makindu	2	5	-	-	-	-
Kwakavisi	Kwakavisi	Kwakavisi	-	-	0	0	1	5
Kilili	Kilili	Kilili	-	-	0	0	1	3

Larger villages generally have three to five kiosk retailers and at least one trader who is a wholesaler/retailer. This wholesaler/retailer sources in relatively larger quantities than the kiosk retailers from a supplier outside the community with whom he or she has a standing supply relationship. These traders outside the community supplying the wholesaler/retailers we refer to as dedicated regional wholesalers, and they deal solely in large volumes of bulk cereals. These traders are located in the larger cities of Wote, Makindu and Emali. Smaller villages often have a few kiosk retailers who source from community wholesale/retailers or from mobile traders whose lorries pass through the region. Figure 3 illustrates the flow of maize and beans from Mombasa and Tanzania to

the regional markets of Emali, Wote and Makindu and then to the larger towns. From the wholesaler/retailers in the larger towns, the supplies then flow to kiosk retailers in the small towns and villages.

**Figure 3: Flow of Maize and Bean Supply to Suppliers in Makueni District**

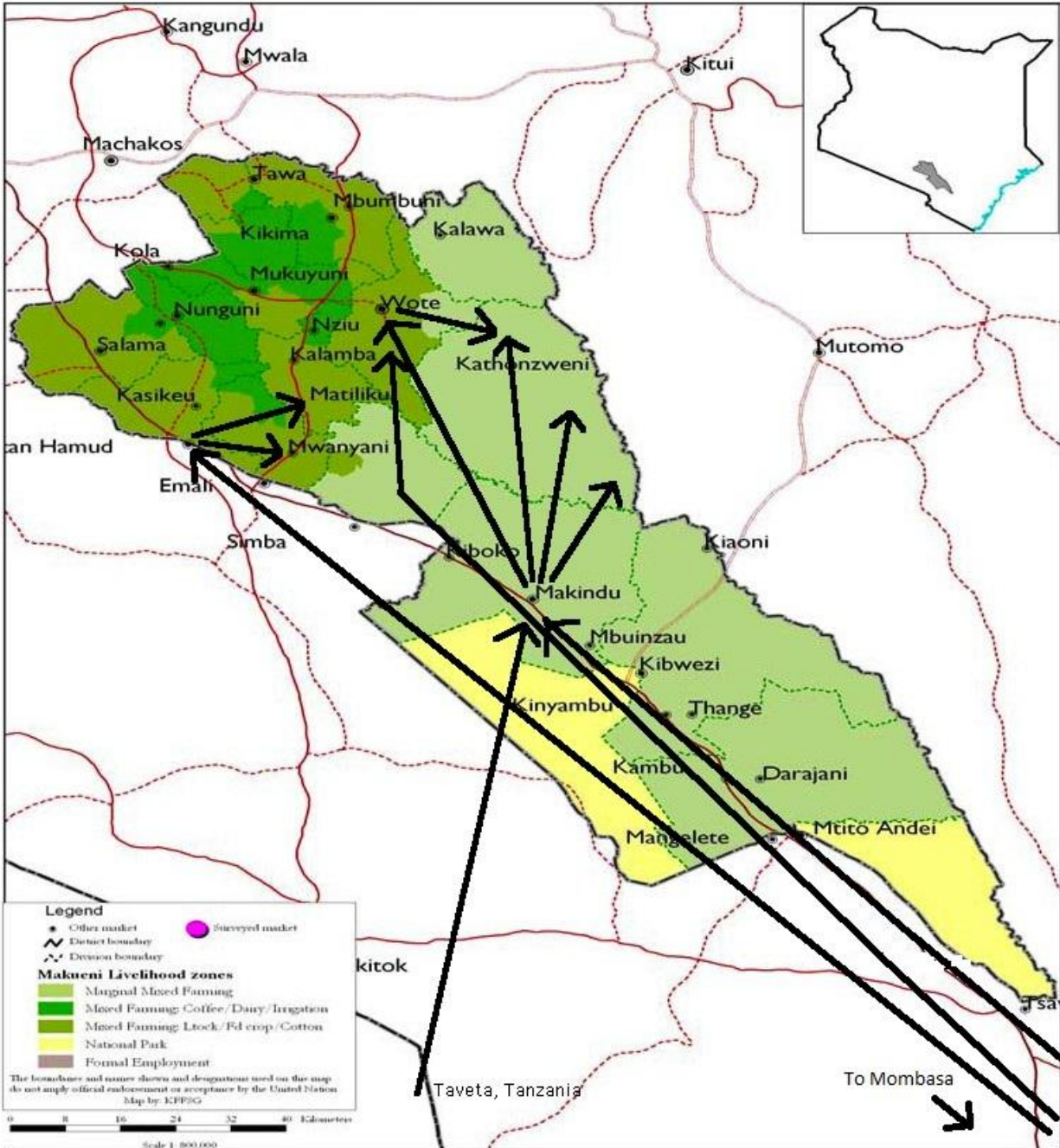


Table 18 presents traders’ mean restocking frequency in the high and low seasons as well as the percent giving and receiving credit in the past five years. Table 19 characterizes kiosk retailers, village wholesale/retailers, and dedicated regional wholesalers by their mean high and low season weekly cereals volume values, number of types of suppliers and number of types of buyers. Kiosk retailers

clearly operate in smaller volumes, with fewer sales and source markets while the mean maize volumes of dedicated wholesalers vary between 180 bags (low season) and 400 bags (high season), using the July 2010 wholesale maize purchase price of KSh 1,300 per 90 kg bag.

**Table 18: Restocking Frequency, Credit Access and Supply, and Percent New Entrants in Previous Five Years**

	<b>Dedicated wholesalers (5)</b>	<b>Wholesaler/ retailers (12)</b>	<b>Kiosk retailers (5)</b>
Mean frequency of restocking per month from primary supplier, high season	7.6	4.1	3.8
Mean frequency of restocking per month from primary supplier, low season	0.8	1.6	2.2
Percent receiving credit in the last five years from suppliers	60%	66.7%	80%
Percent giving credit to their customers	100%	100%	100%
Mean total outstanding credit, July 2010	KSh 285,800	KSh 38,360	KSh 7,050
Percent new entrants in previous 5 years	20%	42%	40%

**Table 19: Weekly Cereals Volume Values, Number of Sales and Supply Market Types**

	<b>Dedicated wholesalers (5)</b>	<b>Wholesaler/ retailers (12)</b>	<b>Kiosk retailers (5)</b>
High Season: mean maize and beans weekly volume values	KSh 520,425	KSh 74,100	KSh 19,810
Low Season: mean maize and beans weekly volume values	KSh 240,305	KSh 22,030	KSh 5,070
Number of customer types, sales (maize and beans)	10	5.2	3
Number of supplier types, maize	2.6	2	1.6
Number of supplier types, beans	2.4	1.58	0.8

Because kiosk retailers often source from wholesaler/retailers in their own communities or in a proximate village, it is the wholesaler/retailers' relationships, constraints, and capacities that largely determine supply response in a community. We therefore focus on the capacity of wholesaler/retailers and their dedicated regional wholesalers to meet rising food demand. Note that because most small retailers reported sourcing from suppliers other than the sub-location's group of wholesaler/retailers our estimate is likely to underestimate the excess capacity in the sub-location market.

In Makeni, we elicited the short-term trade capacity of suppliers by asking how many 90 kg bags of both maize and beans they could source given their current access to cash and credit. We then asked the supplier how long it would take him or her to source that amount they had stated. If the supplier responded that it would take more than a week, then the supplier was asked how much he or she could source in a week. These short-term trade quantities for beans and maize were multiplied by

the current trader-specific purchasing price for each commodity to yield a short-term trade value capacity for each supplier. In the case that the supplier was not currently selling beans, and therefore lacked a current purchasing price, the mean current purchasing price for his trader type was used. Traders were *not* prompted to estimate their sourcing capacity given a hypothetical significant increase in demand. A significant demand increase would likely also increase the trader's expected cash flow and therefore the amount that they could source. For this reason, our method of elicitation again likely understates the trader's short-term sourcing capacity.

We sum this calculated short-term (within one week) capacity across traders within a sub-location, using the sub-location mean value to impute capacity of the few wholesaler/retailers that we did not interview. In this way, we generate the total value of short-term capacity (current season) at the sub-location administrative level (Row C of Table 20). As with the sub-location short-term capacity calculation, to calculate the sub-location high-season volume values (Row A) we summed traders' individual values at the sub-location level with values of wholesalers not surveyed imputed. We surveyed in mid-July during the short rains maize harvest, a period between most traders' reported seasons of high and low sales.

The sub-location excess capacity (Row D) is the difference between the calculated total value of wholesaler/retailer short-term maximum capacity (Row C) and the total value of current volumes (Row B). Our interviews indicated that the transacted volumes of Makueni suppliers are highly seasonal. Therefore, to compute a lower bound, we multiplied the suppliers' reported high season volumes (Row A) by the current season price. Because the surveying took place during harvest season, the current season price is relatively low compared with times of the year in which there is less available local maize. Using the current season price in our estimate, therefore, further understates the trader's short-term excess capacity and strengthens our argument that our method establishes a lower bound on trader short-term excess capacity. The difference between the sub-location high season trade volume (Row A) and the total capacity calculation (Row C) serves as a lower bound on the estimated excess capacity of traders.

All excess capacity values in Rows D and E of Table 20 are well above the calculated mean sub-location transfer-induced demand of KSh 124,800 (Table 16), suggesting the sub-location markets would be able to handle the increase in demand generated by a cash transfer of KSh 1,500 disbursed to 160 recipient households per sub-location. Based on our conservative estimates, the Kitise sub-location lower bound excess capacity value is less than the upper bound estimate of a cash transfer induced demand, and therefore additional data may be required and care taken before expanding the number of recipients in that area.<sup>5</sup>

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<sup>5</sup> The induced food demand of 160 households receiving a restricted food voucher worth KSh 1,500 (similar to CRS' prior programming) would be KSh 240,000 and would exceed both the lower and upper bounds of excess capacity in the Kitise sub-location. In this case, the maximum number of recipients would be calculated to be 120 households (a demand increase of KSh 180,000 for food-restricted vouchers) so as not to exceed the lower bound excess capacity of traders in the sub-location.

**Table 20: Sub-location Excess Capacity Calculation and Components, KSh**

	<b>Mithumba</b>	<b>Mavindini</b>	<b>Kithiki</b>	<b>Kitise</b>
A. High Season: mean maize and beans weekly volume values (KSh)	54,000	440,903	170,489	78,637.5
B. Current Season: mean maize and beans weekly volume values (KSh)	2,970 <sup>6</sup>	301,013	91,713	44,212
C. Short-term capacity value (KSh)	324,000	1,740,600	1,022,400	259,200
D. Sub-location excess capacity (KSh) (C-B)	321,030	1,439,588	930,687	214,988
E. Sub-location excess capacity, lower bound (C-A) (KSh)	270,000	1,299,698	851,910.8	180,563

Based on excess capacity calculations for dedicated regional wholesalers we calculate that these sub-location excess capacities could be met by the dedicated wholesalers. The value of excess capacity among Makindu market dedicated wholesalers we estimate to be greater than KSh 4 million and the excess capacity value among dedicated wholesalers in Wote is greater than KSh 2 million.<sup>7</sup>

Excess capacity calculations are estimated using the current season as a reference. An evaluation of the potential effects of an intervention designed to last more than several months should take into account possible seasonality in commodity availability, cash, and credit. Table 21 presents the constraints limiting supply expansion as cited by vendors. Both wholesaler/retailers and kiosk retailers cited limited credit from their suppliers as a primary challenge to expansion.

**Table 21: Primary Constraint to Increasing Capacity, Percent Responding**

	<b>Dedicated wholesalers (n=5)</b>	<b>Wholesaler/retailers (n=12)</b>	<b>Kiosk retailers (n=5)</b>
Credit from suppliers	20%	66.7%	40%
Credit repayment by customers	20%	-	40%
Commodity availability	-	25%	-
Insecurity	20%	8.4%	-
Transport	40%	-	20%

<sup>6</sup> The Mithumba estimate current season volume value estimate is extremely low because the community wholesalers reported having purchased and sold small quantities in the past month during the local harvest.

<sup>7</sup> An important next step before program implementation is to aggregate estimated excess supply capacity within a market shed and compare the total estimate with the estimated excess capacity of the common source market. For example, if Mithumba and Mavindini wholesalers share a common set of dedicated wholesalers, one would verify that the shared dedicated wholesalers could also meet the estimated demand increase without increasing costs.

### **MIFIRA question 1d: Do local food traders behave competitively?**

In a competitive market, traders' prices should be close to their marginal costs and increases in prices should be a function of increases in trader costs. Table 22 presents the mean difference, by trader type, between the July 2010 sales and purchase prices. Dedicated wholesalers include the per-90 KG bag cost of delivery to the Makueni sub-locations in the price paid by wholesale/retailers. Wholesaler/retailers report that this service costs 150-200 KSh per bag. The operations of few wholesaler/retailers or kiosk retailers involve transport apart from these deliveries.

**Table 22: Maize and Bean Mean Trader Margins, July 2010 (transport, storage, labor not subtracted)**

	<b>Dedicated wholesalers</b>	<b>Wholesaler/retailers</b>	<b>Kiosk retailers</b>
Maize margin, July 2010	265 KSh/90 KG	301 KSh/90 KG	223 KSh/90 KG
As percent of trader maize purchase price	20.4%	20.1%	17.2%
Bean margin, July 2010	531 KSh /90 KG	648 KSh/90 KG	700 KSh/90 KG
As percent of trader bean purchase price	13.2%	13.1%	14.5%

In the household surveys and focus group discussions, Makueni households reported access to a variety of local retailers and market types. Our data on the number of wholesaler/retailers and kiosks in Makueni sub-locations (Table 17) reflects this variety. Moreover, at the wholesaler/retailer and kiosk retailer trader levels there is evidence of ease of entry, a key indicator of a market's competitiveness. Forty-two percent of 12 wholesaler/retailers and 40% of the 5 surveyed kiosk retailers started their operations within the last five years.

Among regional wholesalers in Wote and Makindu, the level of concentration is higher and, likely due to the high capital requirements of the operation, entry is more difficult. Only one surveyed dedicated regional wholesaler had entered within the past ten years. In a 2009 Makueni District market profile, the Kenya Food Security Steering Group expressed concern about competition at the dedicated wholesaler level. They write, "cases of hoarding were not discovered but given the existing concentration ratio of 75 percent for wholesalers cartels are likely to exist" (p. 6). Our own interviews established that while several dedicated regional wholesalers may sell and source within a given administrative location and while most sub-location retailer/wholesalers report having bought from multiple suppliers, generally only one dedicated wholesaler provides a village trader with credit and on-call supply services. This is an indication of potential non-competitive behavior among regional wholesalers, and precautions such as training of households to report staple food commodity price increases should be taken when implementing a transfer program.

### **MIFIRA question 1e: Do food insecure households have a preference over the form/mix of aid they receive?**

Overall, respondents are divided over which form of aid they prefer. The most common form of aid preferred by the respondents is cash, followed by food, a mix of transfer types, and vouchers in that order.

**Table 23: Aid Preferences of Respondents in Makueni**

<b>Cash</b>	<b>Food</b>	<b>Voucher</b>	<b>Mix</b>
32%	26%	20%	22%

Strictly in terms of recipient preference, cash would be the best programming choice. However, depending on the targets and objectives of the program, it might be useful to more closely examine respondents with specific characteristics. In particular, women's preferences differ from men's. Women tend to strongly prefer food aid to all other types of aid, and they least prefer cash aid.

**Table 24: Correlation between Aid Preference and Female Respondent**

<b>Cash</b>	<b>Food</b>	<b>Vouchers</b>	<b>Mix</b>
-0.15	0.30	-0.10	-.06

In Makueni, it is not necessarily possible to determine which form of aid distribution is the most strictly preferred for those respondents who had been voucher recipients. However, it is clear that food aid is least preferred by voucher recipients. This indicates that voucher recipients are partial to market-based interventions.

**Table 25: Correlation: Aid Preference and CRS Voucher Beneficiary**

<b>Cash</b>	<b>Food</b>	<b>Vouchers</b>	<b>Mix</b>
0.02	-0.23	0.08	0.14

Among those survey respondents in Makueni who stated their preferred aid disbursement to involve a mix of the three primary forms, a mix of cash and voucher was the most selected option. Half of those wanting cash and vouchers in their aid disbursement also wanted food to be included. All together, 90% of survey respondents wanting a mix identified cash as one of the aid forms.

**Table 26: Distribution of preferences among those wanting mix**

<b>Cash/ Voucher</b>	<b>Cash/ Food</b>	<b>Food/ Voucher</b>	<b>All 3</b>
40.0%	10.0%	10.0%	40.0%

## **5. Conclusions**

While Mathare and Makueni represent two quite distinct locations, the results of the MIFIRA analysis for each area yield quite similar conclusions. In summary, the first sub-question addressed

by the MIFIRA framework is that of market accessibility by food insecure households. In both locations, people go to the market nearly every day, signaling sufficient market access. Also, the majority of survey respondents were within walking distance of the market, again indicating that market access is generally good for most people. The second and third sub-questions within the MIFIRA framework deal with the amount of additional demand for food that might be generated by a program and whether traders can meet this demand without increasing prices. For Mathare the mean MPC for food is approximately 0.32 and for Makueni the mean MPC for food is 0.52. Thus, the net increase in food demanded can be estimated by multiplying the entire value of the program by 0.32 or 0.52 depending on the location. In both cases, when we calculated the excess capacity for traders in each area and compared it to the estimated increased demand for food, we conclude that the traders could meet the demand with no price increases or minimal increases expected. The one exception is a food-restricted voucher program in the Kitise sub-location of Makueni. Such a program in that sub-location should not exceed 120 participating households.

Within the sub-question of whether traders act competitively, there is some cause for concern about collusion in both locations by dedicated wholesalers. In Eastleigh, there is a network of traders who supply a large majority of goods to Mathare retailers. While it is unclear whether these wholesalers operate in an uncompetitive manner, the operations of this supply market merits further investigation. In Makueni it is also possible that the wholesalers may be operating in a collusive manner. Retailers are often only serviced by a single wholesaler, and they may have officially or unofficially segmented the market. These concerns about non-competitive trader behavior should be addressed through program design before implementation of any program begins.

The final sub-question within MIFIRA relates to the preferences of food insecure households for different forms of aid. Generally speaking, the household survey respondents were in favor of a market-based approach to receiving aid. Both cash and vouchers were favored by survey respondents. Given the ability of traders to handle an increase in demand, and the preference of food insecure households for either cash or vouchers, it is our recommendation that any aid be disbursed in the form of cash and/or vouchers. The optimal distribution could range from only vouchers to only cash or a mix of both. In both Mathare and Makueni, people more commonly stated that they would prefer cash. However, a great number of people also stated that they would like to have a mix of cash and vouchers. In the end, the decision of cash versus vouchers comes down to preferences of recipients, program implementers, and the donor organization. For Mathare and Makueni, it is our conclusion that either option is acceptable and is not likely to create market distortions.



## References

- Central Bureau of Statistics, et al. 2005. *Geographic Dimensions of Well-Being in Kenya: Who and Where are the Poor? A Constituency Level Profile, Vol. II*. Accessed on July 26, 2010.  
<http://www.scribd.com/doc/2224390/geographic-Dimensions-of-WellBeing-in-Kenya>
- Dao, Minh Quang. 2004. Rural poverty in developing countries: an empirical analysis. *Journal of Economic Studies*, 31: 5/6.
- FAO. 2009. *The State of Food Insecurity in the World: Economic Crisis – Impacts and Lessons Learned*. Rome, Italy.
- Kennedy, Gina. 2003. *Food Security in the Context of Urban Sub-Saharan Africa*. Internet Paper for FoodAfrica Internet Forum, 31 March – 11 April 2003. Accessed on July 26, 2010.  
<http://foodafrica.nri.org/urbanisation/urbspapers/GinaKennedyFoodsecurity.pdf>
- KFSSG. 2007. *Food Security District Profile: Makueni District, Eastern Province*. Accessed on July 26, 2010.  
<http://www.kenyafoodsecurity.org/images/stories/files/dps/eastern/makueni.pdf>
- KFSSG. 2010. *The 2009 – 2010 Short-Rains Season Assessment Report*. Accessed on July 26, 2010.  
[http://www.kenyafoodsecurity.org/images/stories/files/sra2010/SRA\\_2010.pdf](http://www.kenyafoodsecurity.org/images/stories/files/sra2010/SRA_2010.pdf)
- KFSSG. 2008. *The Impact of Rising Food Prices on Disparate Livelihoods Groups in Kenya*. Accessed on July 26, 2010.  
<http://documents.wfp.org/stellent/groups/public/documents/ena/wfp182903.pdf>
- Kenya National Bureau of Statistics. 2010. *Consumer Price Index*. Accessed on July 26, 2010.  
<http://www.knbs.or.ke/>
- Medecins Sans Frontieres. 2006. <http://www.msf.org.au/from-the-field/field-news/field-news/article/australian-photojournalist-at-the-blue-house.html>
- Okati, Samuel, et al. 2009. “Makueni District Market Profile.”
- Oxfam et al. 2009. *The Nairobi Informal Settlements: An emerging food security emergency within extreme chronic poverty*. Accessed on July 26, 2010.  
<http://ochaonline.un.org/OchaLinkClick.aspx?link=ocha&docId=1111015>
- Ruel, Marie T., et al. 2010. “The Food, Fuel, and Financial Crises Affect the Urban and rural Poor Disproportionately: A Review of the Evidence.” *The Journal of Nutrition*. 140: 170S – 176S.
- UN-HABITAT. 2006. *Nairobi: Urban Sector Profile*. Nairobi, Kenya.