Analysis of Household Food Security in Selected Districts of Madagascar

UN World Food Programme

Antananarivo, Madagascar

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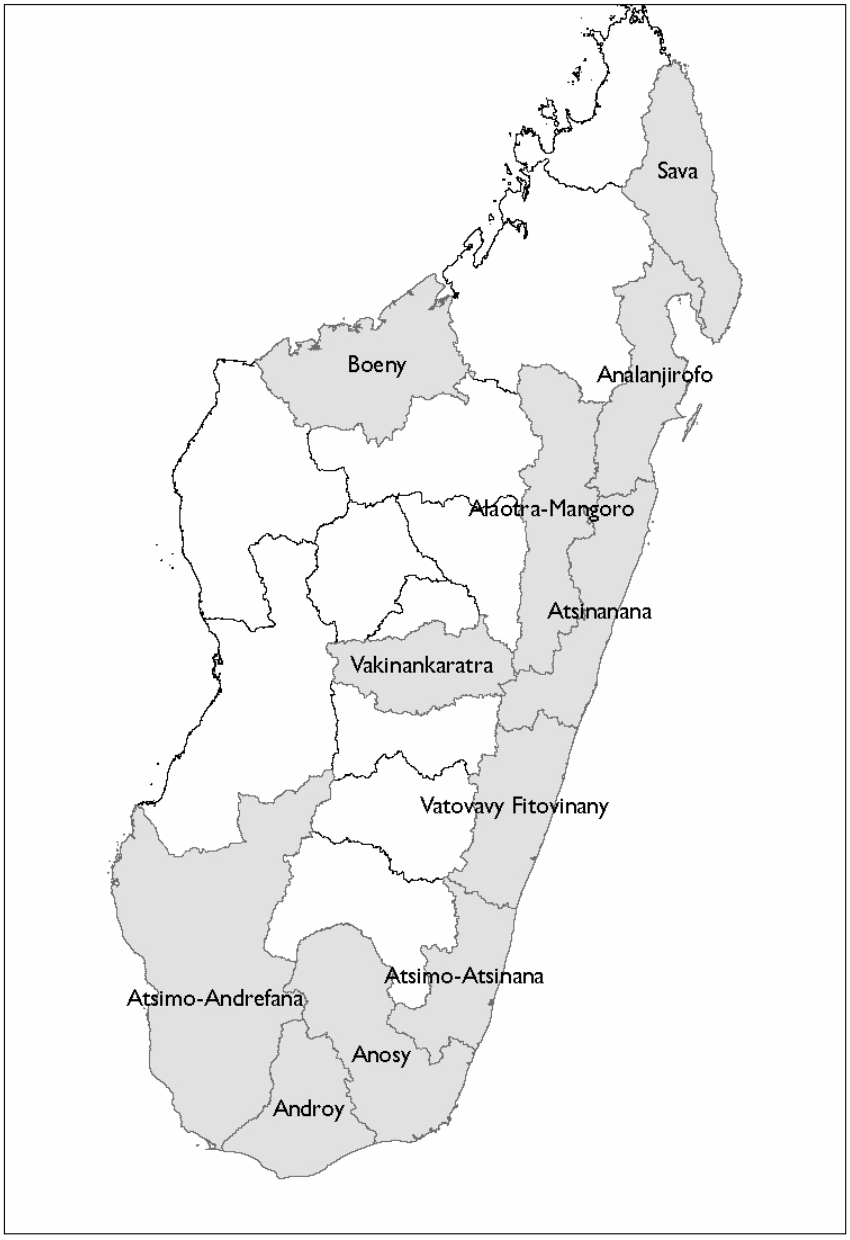
Background and Overview

In June 2009, a household survey was conducted in 33 districts in 11 regions around the country in order to measure the impact of several different shocks on household food security and to provide key household level information into a joint FAO/WFP crop and food security assessment. The focus was to measure the impact (if any) of the political situation as well as the drought in the south that had affected crop production.

This report contains additional analysis of household data from the June 2009 survey and focuses on identifying areas which were food secure as well as those that were chronically food insecure and those that were newly food insecure due to the poor performance of the agricultural season.

The report will first provide some descriptive analysis by region and district and then will outline the analytical approach for the food security classification analysis, followed by the description of the food security groups and lastly their location within the country, by sampled district.



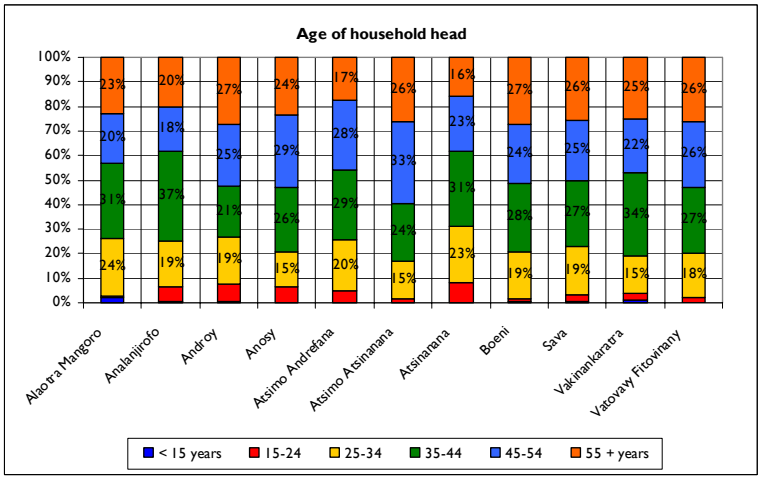
Household Survey Findings

Demographics

***Household size*:** The mean household size was 5.8 persons, ranging from 4.7 in *Analanjirofo* to 7.1 persons in *Androy* region while the median was 5 persons. However, about one-quarter of the sampled households in *Atsimo Atsinanana* and *Androy* regions had 10 or more members. In contrast, about one-third of the sample households in *Analanjirofo* region had 1-3 members. By district, the median household size was 7 persons for households in *Beloha*, *Toliary II* and *Tsihombe* while the smallest households were found in *Fenoarivo Atsinanana* and *Toamasina II* samples (4 persons).

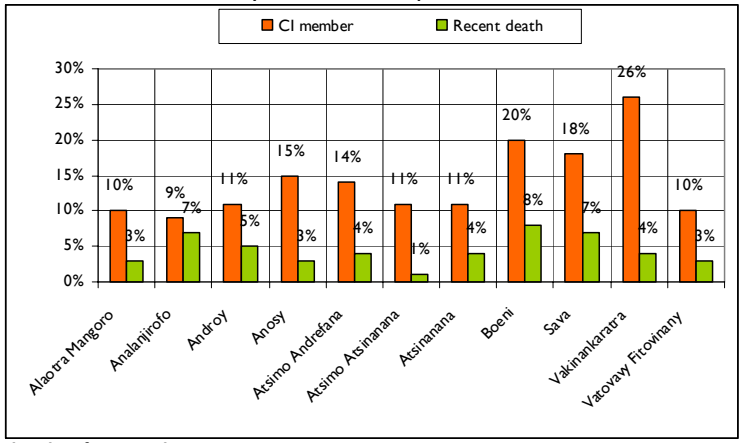
***Female headed households*:** In total, 17% of the sample households were headed by women with some variation between the regions. Twenty percent of the sample households in *Androy* and *Atsinanana* were headed by women compared to only 14% in *Anosy* and *Atsimo Andrefana*. By district one-third of the households in the *Ambovombe* and *Antsirabe II* samples were headed by women, compared to only 6% in *Toliary II* and 7% in *Betafo* samples.

***Age of household head*:** The median age of household heads was 44 years with female heads being slightly older (45 years) than male heads (42 years). Only a few households reported a head younger than 15 years of age. The chart below shows the ages of household heads by region. The oldest household heads appear to be found in *Atsimo Atsinanana* while the youngest are found in *Atsinanana*. By district, 16% of the household heads were younger than 25 years in *Beloha* while 40% were 55 years or older in *Vohipeno* district.



***Presence of chronic illness*:** In total, 14% of the sampled households had chronically ill member[1], and these were most likely to be found amongst households in *Vakinankaratra* region (26%) and least likely found in *Analanjirofo* region (9%). This is summarized in the chart below. The districts with the highest percentage of households with a chronically ill member include *Faratsiho* (36%), *Betafo* (29%) and *Vohémar* (29%) while the districts with the lowest percentage were *Soanierana Ivongo* (3%) and *Ambovombe* (6%).

***Recent death of a household member*:** In total, only 5% of the sampled households indicated that a household member had died in recent months ranging from a high of 8% in *Boeni* region to a low of 1% in *Atsinanana* region (see above). By district, 14% of the households in Vohémar reported the death of a member, followed by 11% in *Marovoay* and 10% in *Soanierana Ivongo*. Only 1% if sampled households in *Antsirabe II*, *Farafangana*, *Mahanoro*, and *Manakara* districts reported the recent death of a member.



[1] Chronic illness refers to illness for three months or more.

Livelihoods

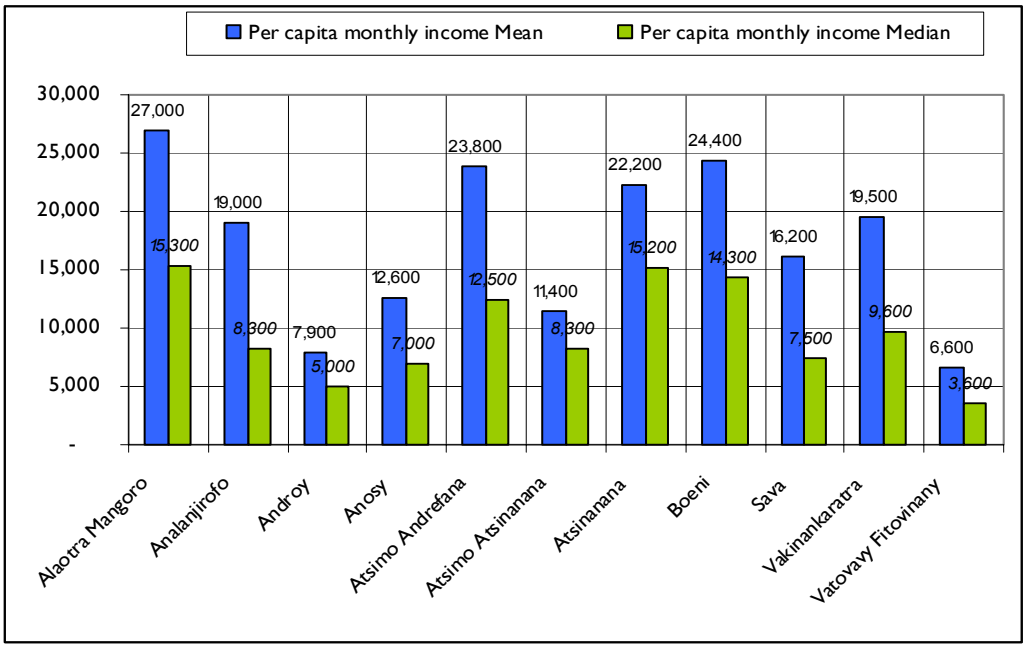
Key livelihood activities the households engaged in during the past six months prior to the survey were investigated in order to understand the households' livelihood strategies in providing for its food and income needs.

The five most important livelihood sources for the sample households were Handicraft/artisan (45%), sales of agricultural products (41%), daily wage labour (32%), animal sales (15%) and agricultural labour (4%). By region, the top four livelihood activities and the percentage of households engaging in them are in the table below. For most regions, the most common activities are Handicrafts/skilled labour or Sales of agricultural products.

	Main livelihood	**Second**	**Third**	**Fourth**
Alaotra Mangoro	Craft/skilled = 55%	Wage labour = 38%	Agric WL = 29%	Fishing = 18%
Analanjirofo	Agric sales = 35%	Craft/skilled = 34%	Wage labour = 32%	Fishing = 9%
Androy	Craft/skilled = 76%	Agric sales = 41%	Wage labour = 37%	Animal sales = 15%
Anosy	Agric sales = 46%	Craft/skilled = 44%	Wage labour = 40%	Fishing = 13%
Atsimo Andrefana	Craft/skilled = 51%	Agric sales = 44%	Animal sales = 24%	Wage labour = 21%
Atsimo Atsinanana	Craft/skilled = 67%	Wage labour = 47%	Fishing = 13%	-
Atsinanana	Wage labour = 42%	Craft/skilled = 37%	Agric sales = 29%	Fishing = 15%
Boeni	Agric sales = 69%	Craft/skilled = 44%	Animal sales = 43%	Wage labour = 38%
Sava	Agric sales = 44%	Craft/skilled = 38%	Wage labour = 22%	Agric WL = 9%
Vakinankaratra	Agric sales = 87%	Animal sales = 48%	Craft/skilled = 29%	Wage labour = 10%
Vatovavy Fitovinany	Wage labour = 47%	Craft/skilled = 36%	Agric sales = 22%	Salary = 4%

The households were asked to estimate the amount of income from the various sources and from this information the per capita monthly income was calculated. By main income source, the activities with the highest per capita monthly income were Private sector salary (39,500 Ariary/month), Public sector salary (33,900 Ariary/month), and Pension (33,300 Ariary/month). The activity with the lowest income was Wage labour which paid only 11,500 Ariary per month.

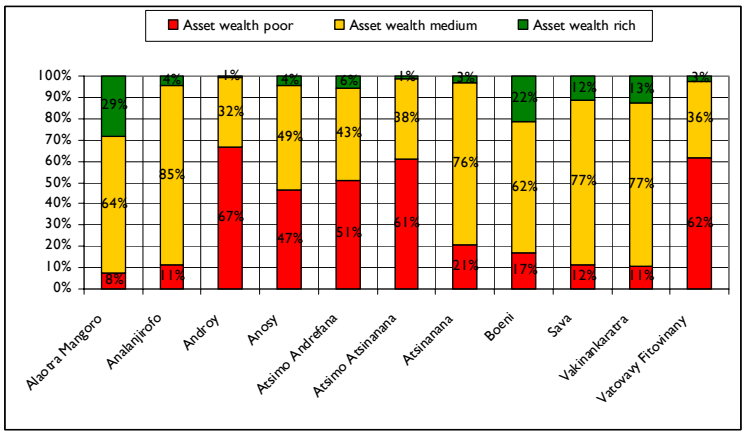
By region, the mean and median per capita monthly incomes are presented in the chart below. These are only estimates from reported information and are by no means exact but rather are useful in comparing the regions.



Households in the *Alaotra Mangoro* region have the highest mean and median per capita monthly incomes. Households in *Atsinanana* have the second highest median per capita monthly incomes followed by households in *Boeni*. The lowest incomes were found amongst households in *Vatovavy Fitovinany* and *Androy* regions.

Household Assets and Livestock

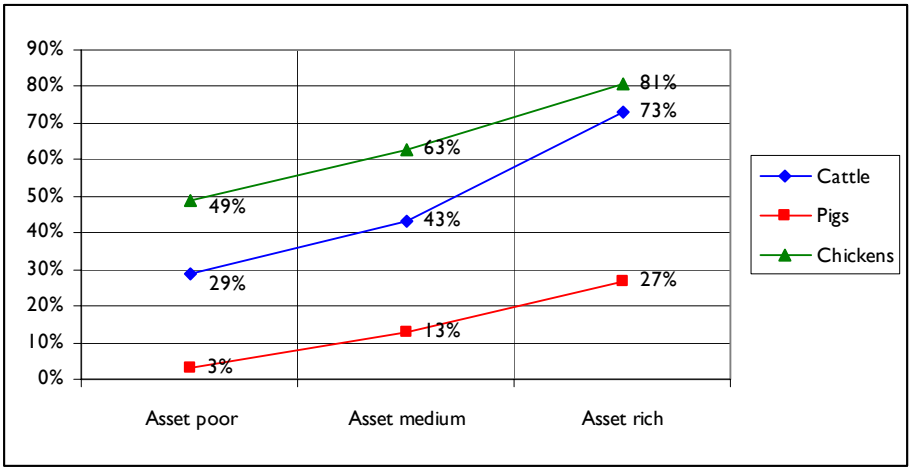
The survey collected data on asset ownership from each household (19 assets, both productive and non productive). The data was then analysed considering whether the households own that particular asset or not. Then households were classified as being asset poor (0-4 different types of assets), asset medium (5-9) or asset rich (10 or more).



Of the total sampled households 35% were found to be 'asset poor' 57% were 'asset medium' and 8% were 'asset rich'. According to the chart on the right, households in *Androy* were the most likely to be asset poor (67%) followed by those in *Vatovary Fitovinany* (62%) while those in *Alaotra Mangoro* are the most likely to be asset rich (29%) and the least likely to be asset poor (8%). By district, 78% of the households in the *Ambovombe* sample were asset poor compared to only 1% in *Vavatenina*. By comparison, 44% of the households in *Amparafaravola* district were asset rich while there were no asset rich households in the samples from *Nosy Varika*, *Vohipeno*, *Mahanoro*, *Tsihombe* and *Ambovombe* districts.

Livestock ownership was low overall, with only 40% of the sampled households owning cattle, only 5% owning sheep or goats and 11% owning pigs. Sixty percent of the households owned chickens though and 14% owned ducks. By region, nearly 60% of the sample households in *Atsimo Andrefana* and *Vakinankaratra* owned cattle compared to only 15% in *Antsinanana*. Sheep and goat ownership was also highest in *Atsimo Andrefana* where 19% of households owned sheep and 20% owned goats. Households in *Androy* were the only others who owned sheep (10%) or goats (14%) in any numbers. At district level, cattle ownership was exceptionally high in *Ampanihy* (82%) followed by *Faratsiho* (71%) and *Benenitra* (71%) and lowest in *Vatomandry* (11%) and *Mahanoro* (15%) districts.

The chart below shows the relationship between household asset wealth and livestock ownership. There was no relationship between sheep or goat ownership and asset wealth so they are not included.

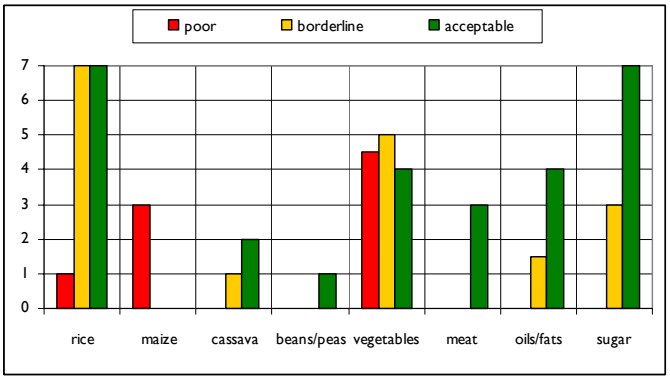


Dietary diversity and food frequency

Research has shown that dietary diversity and frequency are a good proxy measures of food consumption and food security at household level dietary diversity—the number of different foods or food groups consumed over a given reference period, can act as an alternative indicator of food security under a variety of circumstances.

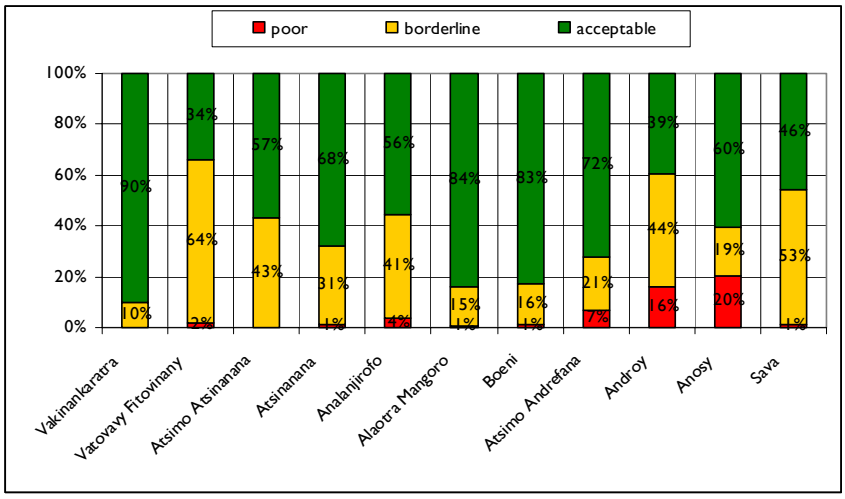
Food consumption data was collected and analyzed using the standard WFP methodology: the variety and frequency of different foods and food groups consumed over a 7-day recall period was recorded to calculate a weighted food consumption score. Weights were based on the nutritional density of the foods. Standard cut-points or thresholds were established to enable analysis of trends and to provide a benchmark for success. Households are then classified as having either 'poor', 'borderline' or 'acceptable' consumption based on the analysis of the data.

Households classified as having 'poor' food consumption were basing their diet eating only maize three days per week, vegetables 4-5 days and rice only one day per week. This is generally regarded as a sign of extreme household food insecurity. Households with 'borderline' consumption are eating the equivalent of rice on a daily basis plus vegetables 5 days a week, sugar/sugar products about three days per week, oils/fats 1-2 days and cassava one day per week. Only households classified as having 'acceptable' consumption were having, along with daily intake of rice and sugar, 4 days of oils/fats and vegetables, 3 days of meat, 2 days of cassava and only one day of beans/peas per week.



Overall, only 5% of the households were classified as having ***poor*** consumption while 33% had ***borderline*** consumption and 62% achieved ***acceptable*** consumption. Households with acceptable consumption were significantly less likely *($p < 0.01$)* to have a female head than those with poor or borderline consumption. In addition, those with poor consumption were significantly more likely *($p < 0.001$)* to have experienced an agriculture-related shock than the others. Lastly, households with acceptable consumption had a significantly higher *($p < 0.001$)* per capita monthly income than the other groups.

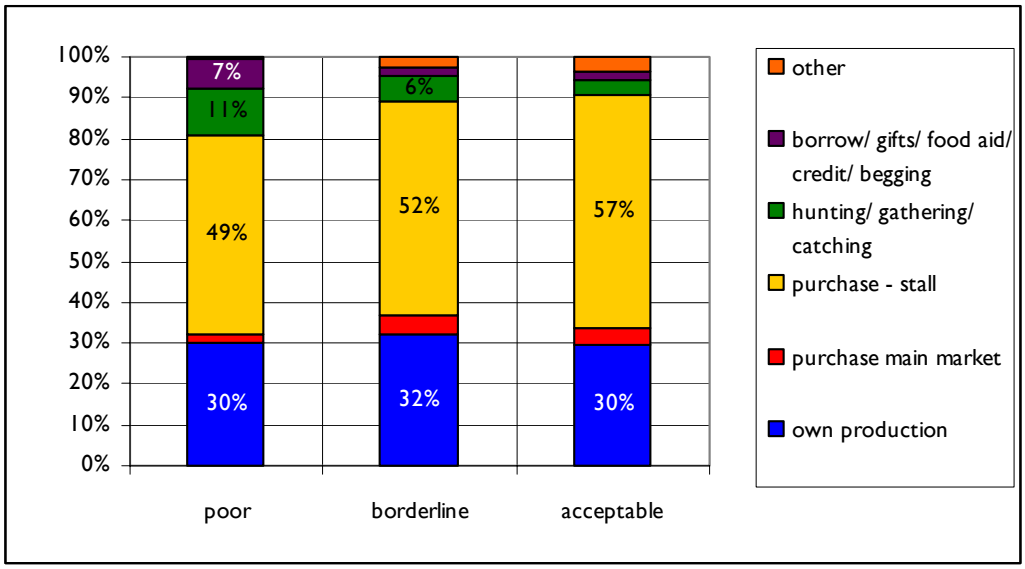
The chart on the right shows the consumption categories by region. *Anosy* has the highest percentage of households with poor food consumption, followed by *Androy*. However, *Vatovavy Fitoviany* region has the lowest percentage of households with acceptable consumption. Food consumption is best in *Vakinankaratra* region with 90% of the households having acceptable consumption. Consumption is also pretty good in *Alaotra Mangoro* and *Boeni* regions.



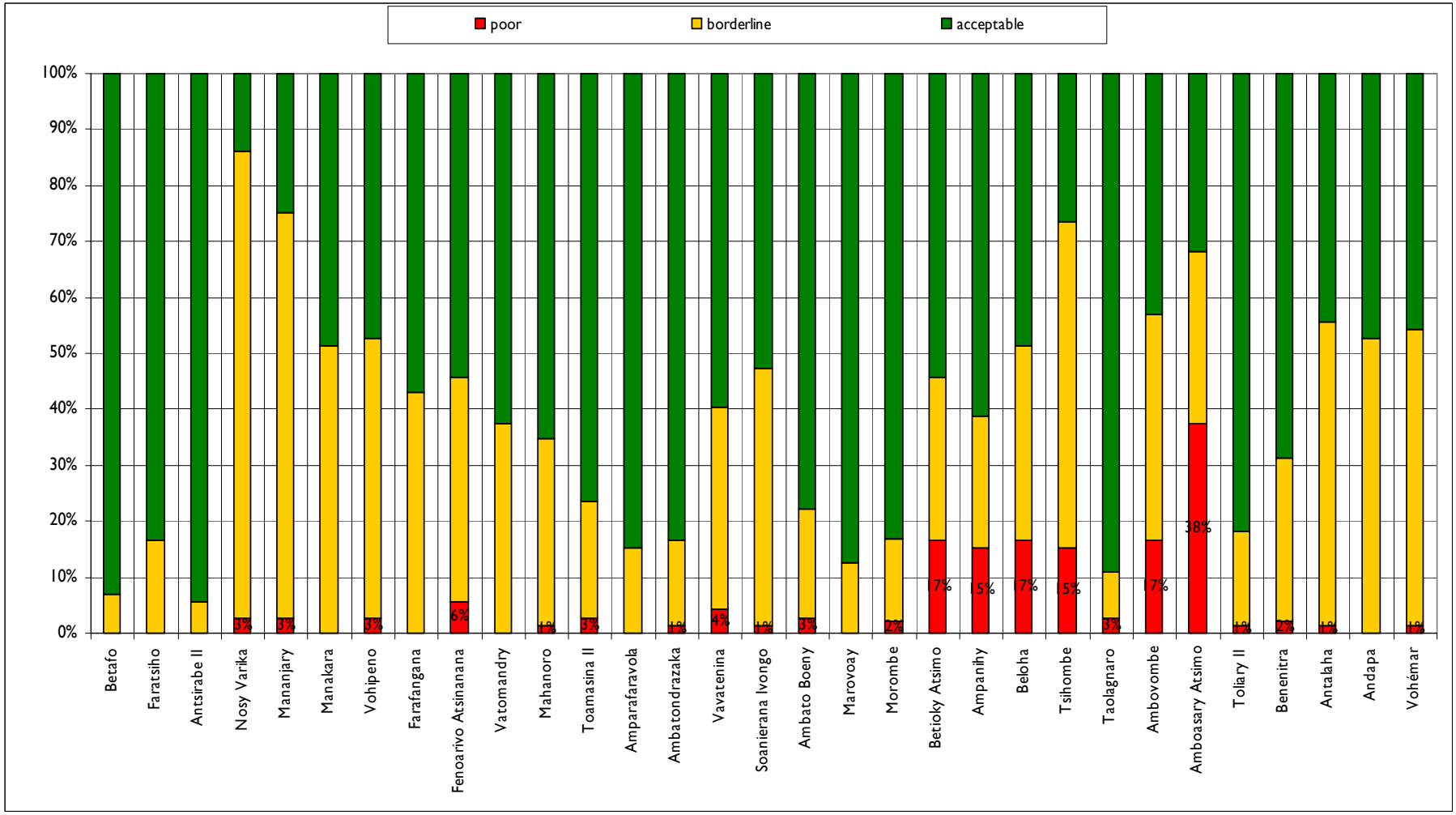
By district, the *Amboasary Atsimo* sample had 38% of households with poor consumption, while 17% in *Ambovombe*, *Beloha* and *Betioky Atsimo* and 15% in *Ampanihy* and *Tsihombe* districts had poor consumption. However, only 14% of the households in *Nosy Varika* and 25% in *Mananjary* had acceptable consumption. The best consumption was found amongst households in *Antsirabe II* and *Betafo* districts where more than 90% had acceptable consumption. This is illustrated on the chart on the next page.

The households were asked to name the current and the usual sources of the foods that were consumed in the 7-day recall period. The main sources of food for households in rural Madagascar are purchase from a local market/stall, own production, hunting/gathering/catching and purchase from a main market. Some households rely on transfers such as gifts, food assistance or even credit but this is not very common.

The chart below compares the current sources of food by food consumption category and it's interesting to note that there is not much difference in the reliance on production for consumption between categories and that to achieve household food security in terms of dietary diversity and food frequency, households must have sufficient purchasing power since more than 60% of the food consumed by households with acceptable consumption is from purchase, compared to about 55% for households with borderline consumption and only 51% for those with poor consumption, who also tend to rely more on hunting/gathering/fishing and transfers. When compared to normal times, those with current poor consumption reported receiving well over 40% of their food from own production, compared to about 40% for households with borderline consumption. However, households with acceptable consumption still only rely on production for about one-third of their consumption.



By region, households with the highest reliance on purchase are found in *Atsimo Atsinanana* where about 80% of the food consumption is from local markets and in *Alaotra Mangoro* where about 80% of their food is purchased from a combination of local and main markets. Those regions where households have greater reliance on production are *Vakinanakaratra*, *Atsimo Andrefana*, *Androy* and *Sava*. Households in *Androy* have the greatest reliance on hunting/gathering/fishing than the others and they also, along with those in *Anosy* have the greatest reliance on transfers.


poor
borderline
acceptable
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
3%
3%
3%
6%
1%
3%
1%
4%
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15%
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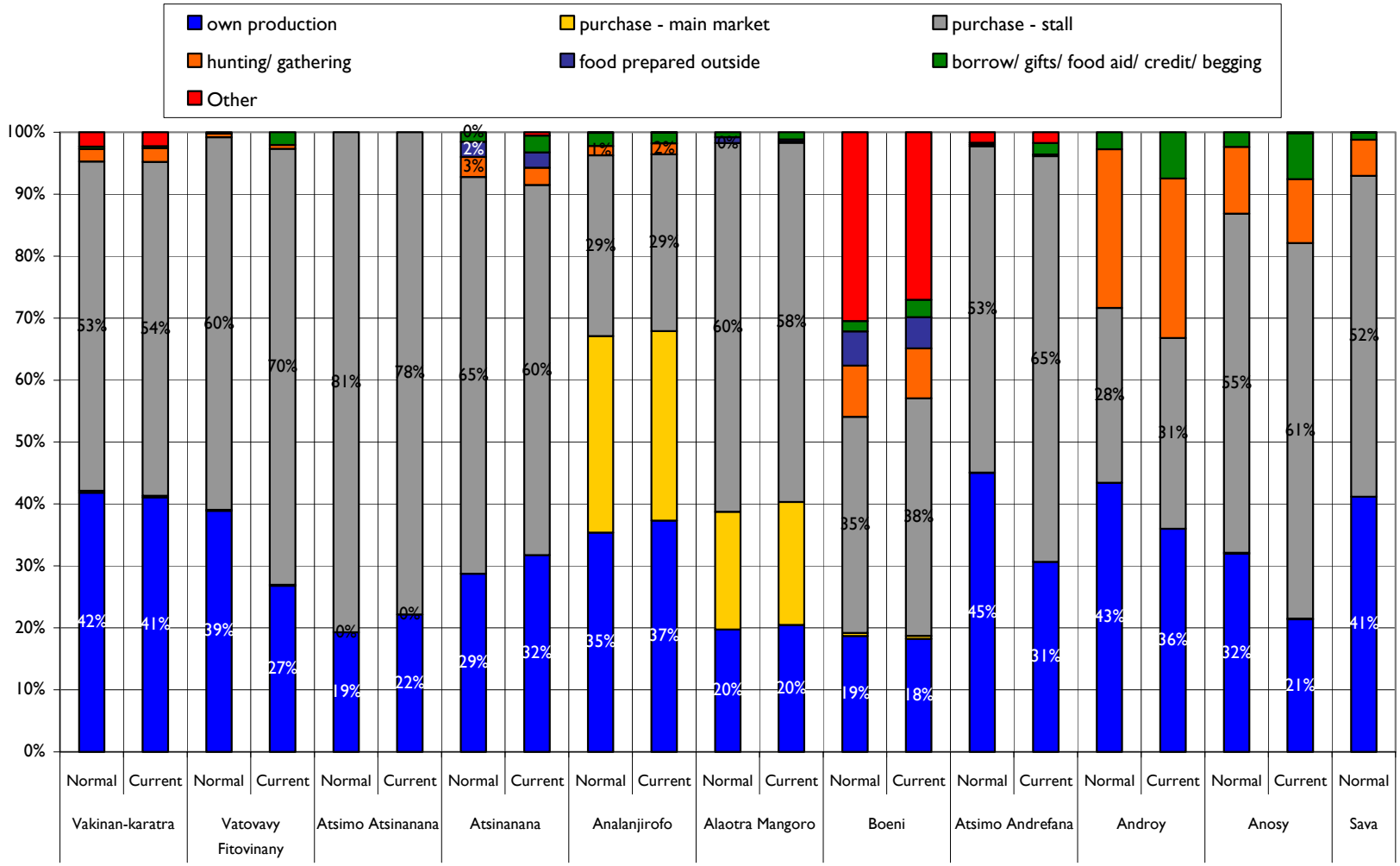
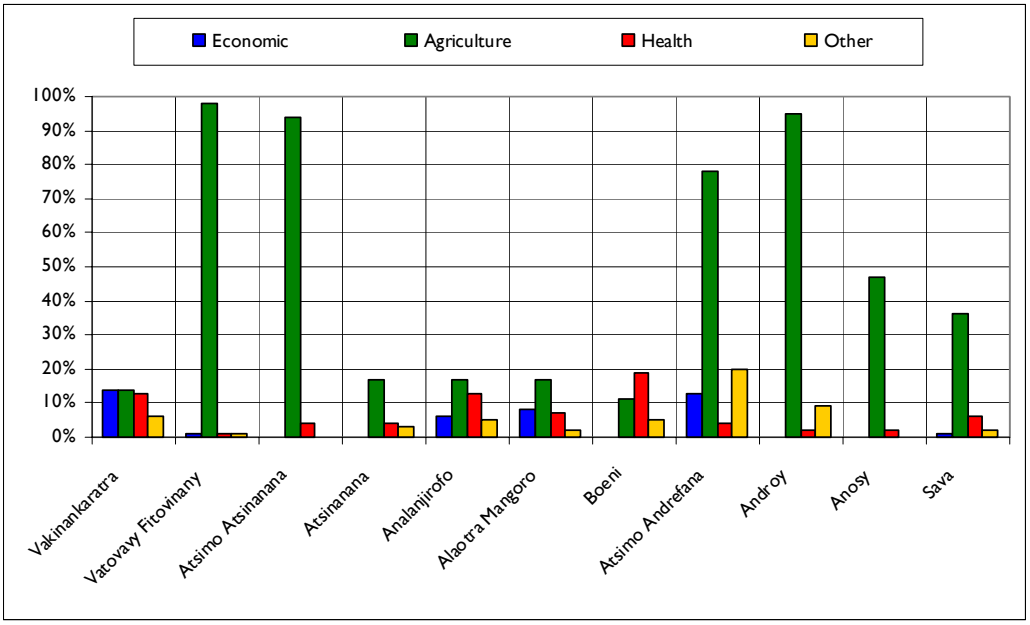
17%
38%
1%
2%
1%
1%
Betafo
Faratsiho
Antsirabe II
Nosy Varika
Mananjary
Manakara
Vohipeno
Farafangana
Fenoarivo Atsinanana
Vatomandry
Mahanoro
Toamasina II
Amparafaravola
Ambatondrazaka
Vavatenina
Soanierana Ivongo
Ambato Boeny
Marovoay
Morombe
Betioky Atsimo
Ampanihy
Beloha
Tsihombe
Taolagnaro
Ambovombe
Amboasary Atsimo
Toliary II
Benenitra
Antalaha
Andapa
Vohémar


own production
purchase - main market
purchase - stall
hunting/ gathering
food prepared outside
borrow/ gifts/ food aid/ credit/ begging
Other
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Normal
Current
Vakinan-karatra
Vatovavy Fitovinany
Atsimo Atsinanana
Atsinanana
Analanjirofo
Alaotra Mangoro
Boeni
Atsimo Andrefana
Androy
Anosy
Sava

Shocks and Coping

Households were asked if they had experienced any shocks in the past 12 months that affected household food security. In total, nearly 85% of the households had experienced some type of shock in the past year. While most households in each region reported a shock, only 54% in *Boeni* and 60% in *Vakinankaratra* and *Analanjorofo* regions experienced shocks. The shocks were clustered into four main types: Economic (unusually high cost of food, loss of job, reduced income, etc.), Agriculture (drought, pests, access to inputs), health (death or illness of family members, unusually high costs of health care) and 'Other'. The chart below shows the distribution by region – a household could name several different types of shocks during the interview.



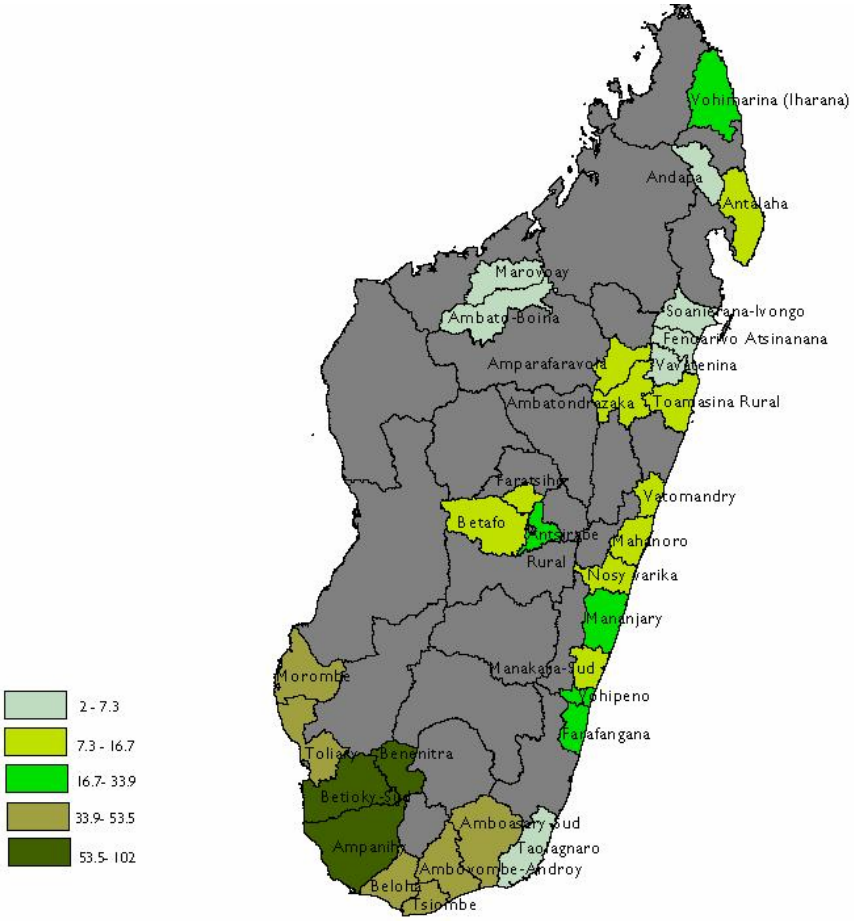
Nearly all households in *Vatovavy Fitovinany*, *Atsimo Atsinanana*, *Atsimo Andreafana* and *Androy* regions were experienced a shock that affected agricultural production. Agriculture shocks affected about half the households in the *Anosy* sample and about one-third in *Sava*. Although economic shocks were not widely reported, more than 10% of the households in the *Vakinanakaratra* and *Atsimo Andrefana* regions were affected. Households in *Boeni* region were most likely to report a health-related shock, followed by those in *Vakinankaratra* and *Analanjirofo* regions.

By district, economic shocks were most often felt in *Antsirabe II* (25%) and *Ampanihy* (24%), followed by *Betafo* (15%), *Morombe* (15%) and *Betioky Atsimo* (15%). Health shocks were most often reported from households in *Fenoarivo Atsinanana* (19%), *Marovoay* (19%), *Ambato Boeny* (18%) and *Betafo* (17%). Agriculture shocks were reported by all households in *Nosy Varika* and *Mananjary* districts and more than 90% in *Manakara*, *Vohipeno*, *Farafagana*, *Ampanihy*, *Beloha*, *Tsihombe*, and Ambovombe district samples.

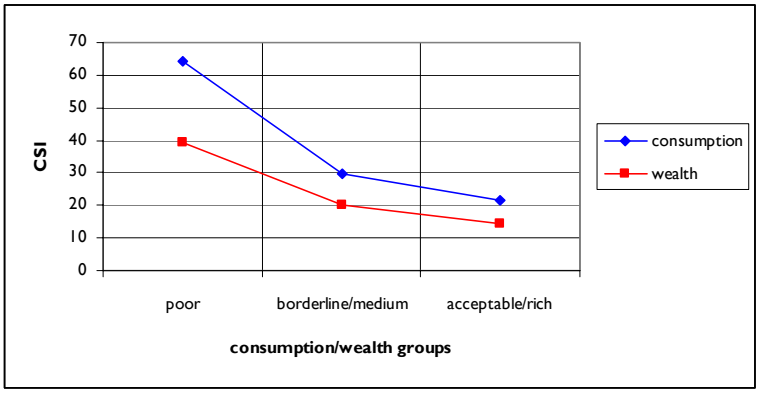
Households were then asked to name the coping strategies used to acquire enough essential food during the seven days prior to the survey. For each strategy, they gave the number of days used in the past week and number of days in a week they are normally used. For the current 7-day recall, a Coping Strategies Index was calculated for each household using the frequency and severity weights of the strategies used. The CSI is a measure of stress experienced by a household, and in this case a measure of stress related to current household food security.

For the sample, the mean CSI was 26 and the median was 12 with a range from 0 (no stress) to 294 which would be very high stress (and could be a data collection error!). By region, the highest mean CSI was found in *Atsimo Andrefanana* (64) followed by *Androy* (51) while the lowest was found in *Analanjirofo* (3), *Boeni* (6) and *Atsinanana* (9). The variation by district is outlined in the map below. The classifications/colours were determined mathematically by the software using 'natural breaks' in the data and are not pre-determined using qualitative interpretations.

It is clear that the greatest stress is found in the southern districts while the least is found most often in the northern sampled areas as well as *Taolangaro* in the south.



The Coping Strategies Index is related to both the Food Consumption classifications and the asset wealth categories as illustrated in the graph on the left. As both food consumption and wealth improve, the stress, as measured by CSI decreases, most especially between poor and borderline/medium. So thus the relationship is strongest in the poorest households and those with poor food consumption.



Changes in income and expenditure

Households were asked if their incomes had changed over the year – increased, decreased or no change. Overall, 16% reported an increase, 59% reported a decrease and 25% indicated no change in their incomes. The activities with the greatest reported decreases were in sales of wild food/products (71%) and sales of fish/fish products (63%) while those with the greatest increases were sales of garden products (30%) and informal service sector work (28%).

More than 90% of the households in *Atsimo Atsiananana* reported a decrease in income followed by 76% in *Atsimo Andrefana* and 71% in *Sava*. Increases were most often reported by households in *Analanjirofo* (38%), *Vakinankaratra* (30%) and *Boeni* (29%).

By district, 94% of the households in *Ampanihy* reported a decrease in income, followed by 92% each in *Benenitra* and *Farafangana*, 89% in *Betioky Atsimo* and 81% in *Vohémar*. Increases were reported by 53% of the households in *Vavatenina*, followed by 36% each in *Faratsiho* and *Amparafaravola* and 33% in *Marovoay* districts.

Food Security and Vulnerability Analysis

One of the objectives of the survey was to determine the levels and geographic distribution of food insecurity using household level data. Following WFP corporate guidance, indicators of food access were used to classify households as being '*food secure*', '*vulnerable*' or '*food insecure*' where vulnerable households are likely experiencing ***acute*** food insecurity and the food insecure are likely to be ***chronically*** food insecure.

Analysis was done using three key variables from the household data:

- **Food consumption score**: A measure of current household food security
- **Number of different types of assets**[2]: A measure of wealth or ability to access food
- **Per capita monthly reported income**: A measure of ability to access food
- **Coping strategies index**: A measure of stress on the household, related to food access

Principle component and Cluster analyses were used to create 4 distinct food security groups with the following characteristics:

	N	FCS	# different assets	Monthly income (p/c)	CSI
Food secure	942	48	7	AR 14,500	0
Food secure – vulnerable	226	48	6	AR 7,500	50.5
Chronic food insecure – poor	783	32	4	AR 7,100	8
Food insecure	329	31	4	AR 5,300	84

- The ***Food Secure*** households are characterised by having generally good food consumption in terms of diversity and frequency, have a diverse set of household assets, the highest average monthly per capita income and are not stressed about accessing food. They are also the least likely to be affected by shocks.
- The ***Food Secure – Vulnerable*** households also have generally good food consumption but are slightly less asset wealthy and have an average monthly per capita income that is about half that of the food secure households. The lower income and the very high levels of stress as measured by the coping strategies index are the main differences from the *food secure* households. As expected they are the second most likely group to have experienced shocks in the past year.
- The ***Chronic Food Insecure – Poor*** households are, as the name implies, chronically food insecure with poor consumption and low asset wealth and income. However, they have a low CSI which implies low levels of stress and relatively low-to-average levels of reported shocks.
- ***Food Insecure*** households are similar to the chronic food insecure- poor households except they have lower reported monthly income and also very high levels of stress as indicated by the high CSI. They could also be referred to as experiencing both **chronic and acute** food insecurity.

Household Demographics

The average household size was significantly *($p < 0.001$)* larger in the *food secure – vulnerable* and *food insecure* households while female headship was significantly *($p < 0.001$)* more common amongst the *food insecure* households and the *chronic food insecure – vulnerable* households.

Chronically ill members were more likely to be found in the households with high CSI – 19% of the *food secure – vulnerable* households and 16% of the *food insecure* households. There was not much difference between groups in the percentage of households experiencing the recent death of a member with only slightly more households in the food secure – vulnerable groups.

[2] Correlates well with ownership of cattle, pigs, chickens and ducks

	HH size	Female head	Chronically ill	Recent death
Food secure	5 persons	13%	14%	4%
Food secure – vulnerable	6 persons	13%	19%	6%
Chronic food insecure – poor	5 persons	21%	12%	5%
Food insecure	6 persons	22%	16%	5%

Livelihoods

Key livelihood activities the households engaged in during the past six months prior to the survey were investigated in order to understand the households' livelihood strategies in providing for its food and income needs. The table below summarises the findings for the three main livelihood activities named by each household.

The livelihood strategies were similar between the *food secure – vulnerable* and *food insecure* households while the *food secure* households clearly benefit from sales of agricultural products. The *chronic food insecure – poor* households rely mostly on their labour for livelihoods with some reliance also on agriculture.

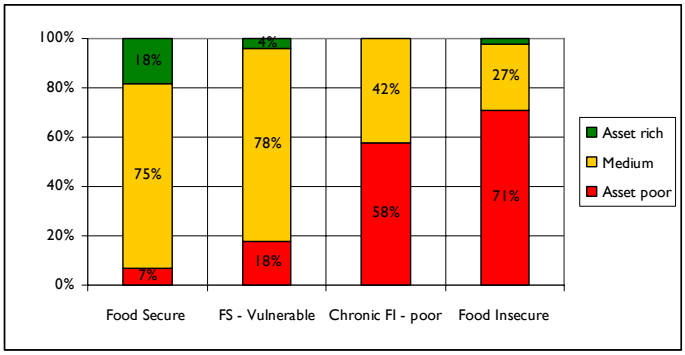
	Main livelihood	Second	Third	Fourth
Food secure	Agric sales = 51%	Craft/skilled = 44%	Wage labour = 23%	Animal sales = 18%
Food secure – vulnerable	Craft/skilled = 53%	Agric sales = 47%	Wage labour = 23%	Animal sales = 20%
Chronic food insecure – poor	Wage labour = 43%	Craft/skilled = 40%	Agric sales = 35%	Fishing = 6%
Food insecure	Craft/skilled = 55%	Wage labour = 37%	Agric sales = 25%	Animal sales = 22%

The households were asked to estimate the amount of income from the various sources and from this information the per capita monthly income was calculated. As shown in the table in the beginning of this section, the median per capita monthly income for the food secure was around 28,800 Ariary which was significantly higher *($p < 0.001$)* than the other groups that were just under 10,000 Ariary.

Household Assets and Livestock

The survey collected data on asset ownership from each household (19 assets, both productive and non productive). The data was then analysed considering whether the households own that particular asset or not. Then households were classified as being asset poor (0-4 different types of assets), asset medium (5-9) or asset rich (10 or more).

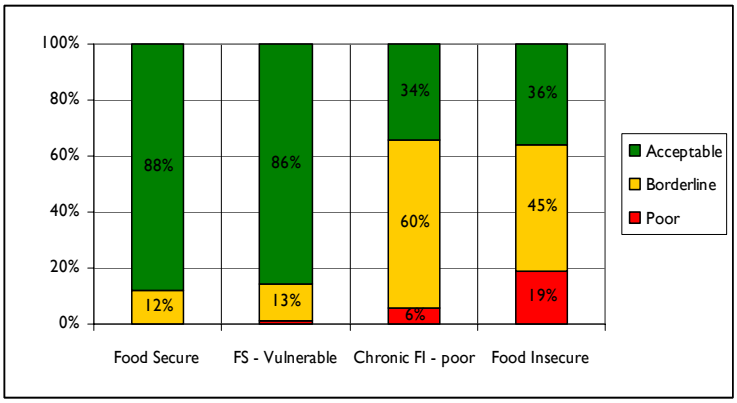
According to the chart on the right, over 70% of the *food insecure* households were asset poor, followed by 58% of the *chronic food insecure – poor* households. Since asset wealth was used to determine these groups, this outcome is expected.



In terms of livestock, the *food secure – vulnerable* households were the most likely to own cattle (55%) while the *chronic food insecure – poor* were the least likely (27%). Sheep and goats were more likely to be owned by *food secure – vulnerable* and *food insecure* households while pigs were most likely to be owned by the *food secure* households (17%). Poultry ownership decreases across food security groups with 70% of the *food secure* owning chickens compared to only 45% of the *food insecure* households.

Dietary diversity and food frequency

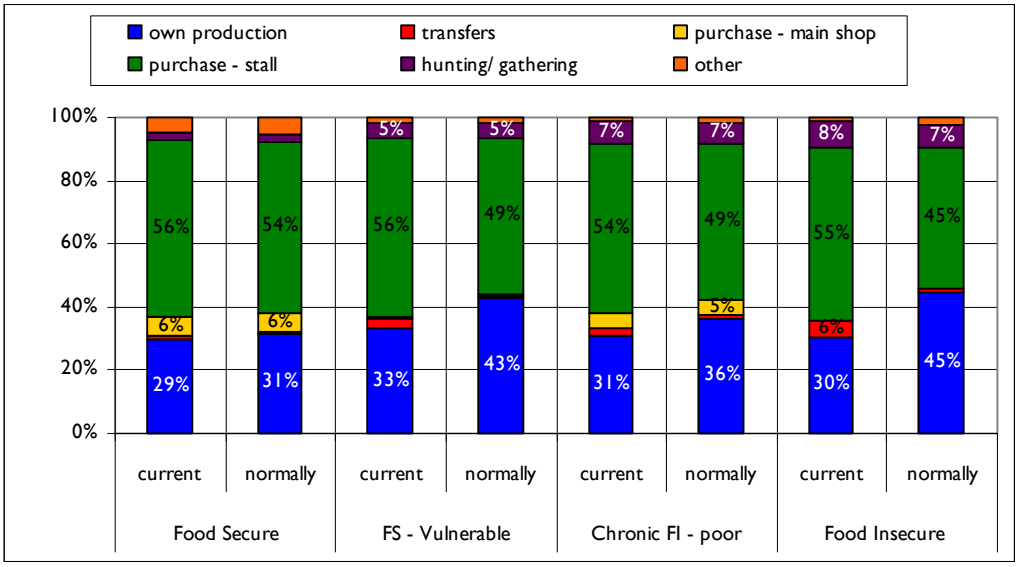
As mentioned earlier, only 5% of the households were classified as having ***poor*** consumption while 33% had ***borderline*** consumption and 62% achieved ***acceptable*** consumption. Households classified as having 'poor' food consumption were basing their diet eating only maize three days per week, vegetables 4-5 days and rice only one day per week while households with 'borderline' consumption are eating the equivalent of rice on a daily basis plus vegetables 5 days a week, sugar/sugar products about three days per week, oils/fats 1-2 days and cassava one day per week. Only households classified as having 'acceptable' consumption were having, along with daily intake of rice and sugar, 4 days of oils/fats and vegetables, 3 days of meat, 2 days of cassava and only one day of beans/peas per week.



The chart on the left shows that even though 5% of the total sample had poor food consumption, 19% of the households in the *food insecure* group had poor consumption. Only one-third had acceptable consumption compared to nearly 90% of the *food secure* and *food secure – vulnerable* households. Again, the food consumption score was used to help classify the households into the food security groups so this trend should be expected.

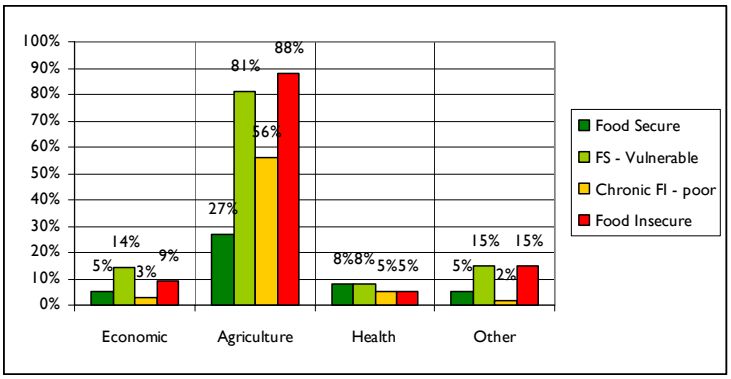
The main sources of food for households in rural Madagascar are purchase from a local market/stall, own production, hunting/gathering/catching and purchase from a main market. Some households rely on transfers such as gifts, food assistance or even credit but this is not very common.

The analysis of the 'current' and 'normal' sources of foods consumed by the households compared by the food security groups is show in the graph below. For the *food secure* households, there is little difference between 'current' and 'normal' sources of food. However, for the other groups, it appears that they normally depend on production more to access food than they were at the time of the survey. Also, across groups, it's clear that reliance on hunting/gathering/fishing is greater in the food insecure households. Also the *food insecure* group has a higher current reliance on transfers than normal.



Shocks and Coping

Households were asked if they had experienced any shocks in the past 12 months that affected household food security. In total, nearly 85% of the households had experienced some type of shock in the past year. The shocks were clustered into four main types: Economic (unusually high cost of food, loss of job, reduced income, etc.), Agriculture (drought, pests, access to inputs), health (death or illness of family members, unusually high costs of health care) and 'Other'. The chart on the right shows the distribution by food security group – a household could name several different types of shocks during the interview.

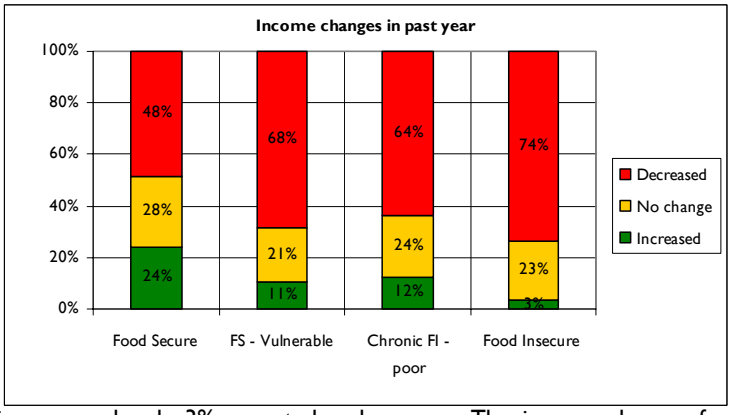


In general, the *food secure – vulnerable* households were the most likely to report shocks and this would explain the higher levels of stress. They are the most likely to have reported an economic or other shock as well as the second highest for agriculture shocks and also tied with the *food secure* group for reporting health-related shocks. The *food insecure* households are also vulnerable to shocks with nearly 90% reporting an agriculture-related shock and 9% with economic shocks. The *chronic food insecure – poor* households are the least likely to report shocks after the *food secure* households.

As mentioned earlier, the Coping Strategies Index (CSI) was one of the indicators used to classify households in the food security groups. As shown in the table in the beginning of the section, the *food insecure* and the *food secure – vulnerable* households had the highest scores while *food secure* households were hardly stressed at all.

Changes in income and expenditure

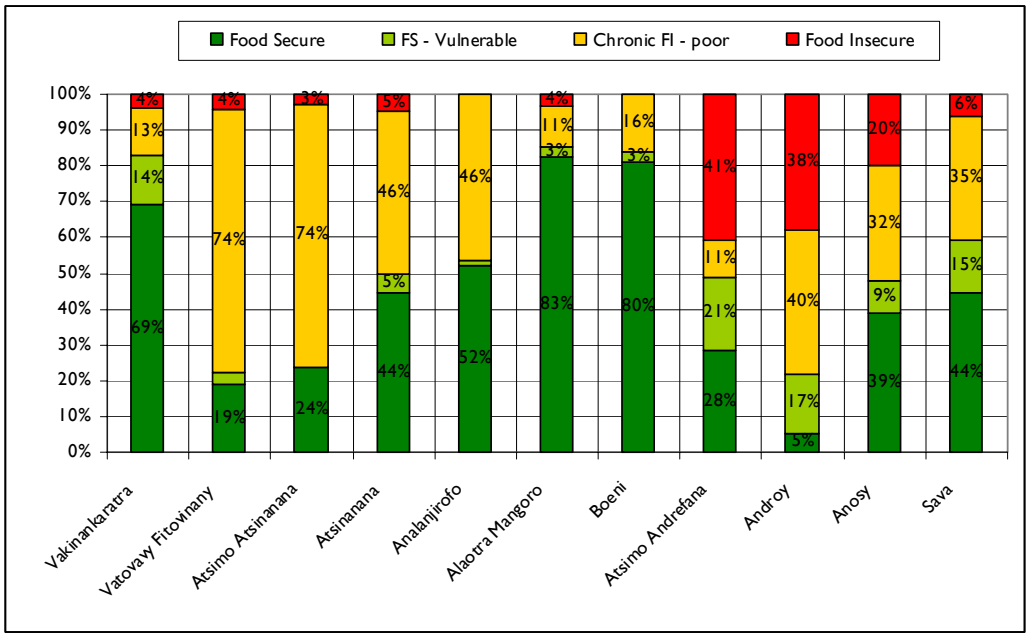
Households were asked if their incomes had changed over the year – increased, decreased or no change. Overall, 16% reported an increase, 59% reported a decrease and 25% indicated no change in their incomes.



The chart on the left shows the reported changes in income by the food security groups. As expected the *food secure* households were the most likely to report increases in income and to have the lowest percentage of households reporting a decrease. On the other hand, nearly three-quarters of the *food insecure* households reported a decrease in income and only 3% reported a decrease. The income changes for the other two groups were similar.

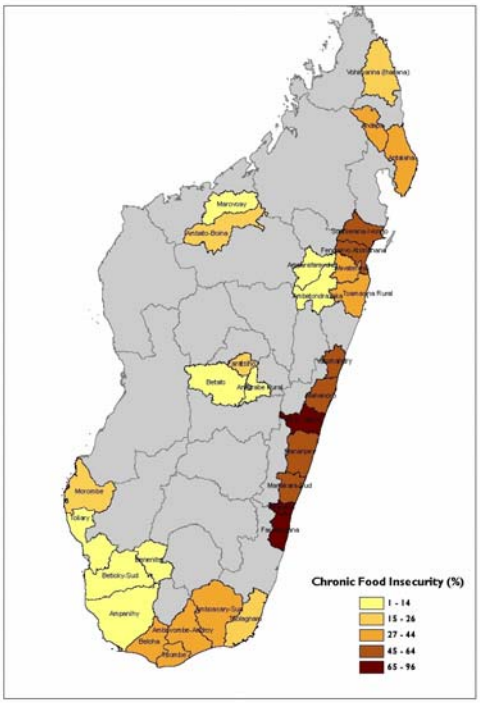
Geographic distribution of households by food security group

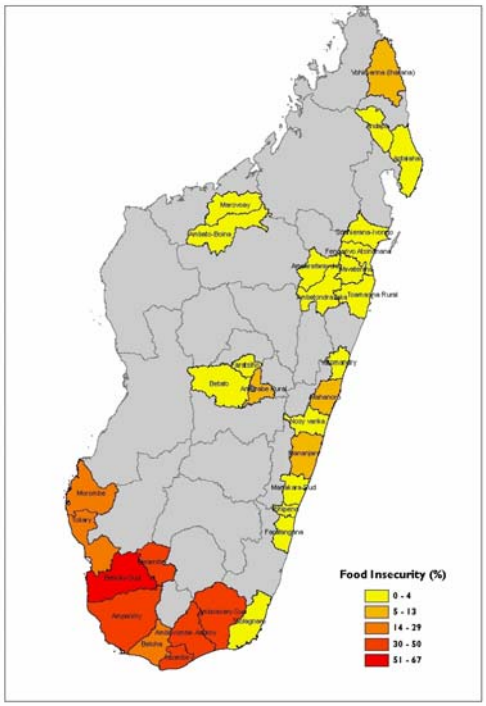
As shown in the chart below, the highest percentage of ***food insecure*** households is found in the *Atsimo Andrefana* region (41%) followed by *Androy* (38%) and *Anosy* (20%). There were no food insecure households found in *Analanjirofo* and *Boeni* regions. However, three-quarters of the households in *Vatovavy Fitovinany* and *Atsimo Atsinanana* region samples are ***chronically food insecure – poor***. The ***food secure – vulnerable*** households are most likely to be found in *Atsimo Andrefana*, *Androy* and *Sava* regions but also some are found in *Vakinanfaratra* region.



The distribution of the chronic food insecure – poor and food insecure households by district are found on the following maps. The cut-points/thresholds for classification are done mathematically by the mapping software using natural breaks in the data and therefore are not pre-established. Full-sized maps are found in Annex II of this report.

As indicated by the darker colours, the districts with the highest percentage of chronically food insecure – poor households are found in the eastern coastal areas, mostly in the central-southern part. For the food insecure, the most affected districts are in the drought-prone south.





Conclusion

The analysis supports what is known inside the country that the concentration of food insecure households in the south were impacted by agricultural production shocks earlier this year that affected their ability to access food. This is illustrated by the reduced reliance on own production for consumption, the relatively poor levels of household food consumption, the high levels of stress as indicated by the CSI and their relative lack of wealth and income opportunities as shown by the low average number of assets and low average per capita monthly income.

In addition, the concentration of chronically food insecure – poor households in the lower eastern half of the country were not necessarily impacted by any shocks but in any given season are likely to experience problems accessing food due to lack of resources and income opportunities. They have few assets, low per capita monthly income and relatively poor household food consumption. The risk is that if a cyclone hits this area, it can easily have a huge impact on their food access and already high levels of malnutrition (which was not measured in this survey).

The on-going and planned activities for communities in these districts should be beneficial in achieving long-term development through community based early warning systems, sustainable livelihood development and improved health and nutrition. In the short-term, these households need some form of food or cash transfers to sustain them while focus on the longer-term issues. In the south, this is especially necessary as many households had poor agricultural production and do not have the resources to purchase the food they need.

Annex I – Tables by Region and District

Table 1 – Household Characteristics by Region

	FHH	Age of head					
		< 15 years	15-24	25-34	35-44	45-54	55 + years
Alaotra Mangoro	18%	2%	1%	24%	31%	20%	23%
Analanjirofo	15%	1%	6%	19%	37%	18%	20%
Androy	20%	1%	7%	19%	21%	25%	27%
Anosy	14%	0%	6%	15%	26%	29%	24%
Atsimo Andrefana	14%	0%	5%	20%	29%	28%	17%
Atsimo Atsinanana	15%	0%	1%	15%	24%	33%	26%
Atsinanana	20%	0%	8%	23%	31%	23%	16%
Boeni	17%	1%	1%	19%	28%	24%	27%
Sava	19%	1%	3%	19%	27%	25%	26%
Vakinankaratra	15%	1%	3%	15%	34%	22%	25%
Vatovavy Fitovinany	16%	0%	2%	18%	27%	26%	26%

Table 2 – Additional Household Characteristics by Region

	Household size					Median HH size	CI member	Recent death
	1 person	2 to 3	4 to 6	7 to 9	10 or more			
Alaotra Mangoro	1%	21%	54%	22%	2%	5	10%	3%
Analanjirofo	3%	28%	55%	13%	1%	5	9%	7%
Androy	2%	13%	36%	26%	23%	6	11%	5%
Anosy	4%	14%	44%	28%	10%	6	15%	3%
Atsimo Andrefana	1%	15%	38%	34%	13%	6	14%	4%
Atsimo Atsinanana	3%	13%	39%	22%	24%	6	11%	1%
Atsinanana	3%	24%	55%	14%	4%	5	11%	4%
Boeni	1%	15%	49%	24%	11%	5.5	20%	8%
Sava	2%	21%	44%	27%	6%	5	18%	7%
Vakinankaratra	1%	14%	55%	24%	7%	5	26%	4%
Vatovavy Fitovinany	0%	10%	50%	32%	7%	6	10%	3%

Table 3 – Household Characteristics by District

	FHH	Age of head					
		< 15 years	15-24	25-34	35-44	45-54	55 + years
Ambato Boeny	17%	1%	0%	28%	25%	19%	26%
Ambatondrazaka	21%	1%	1%	21%	31%	19%	26%
Amboasary Atsimo	19%	0%	6%	15%	32%	26%	21%
Ambovombe	33%	0%	1%	24%	18%	28%	29%
Ampanihy	8%	0%	7%	15%	38%	22%	18%
Amparafaravola	15%	3%	0%	26%	31%	21%	19%
Andapa	8%	0%	3%	21%	28%	22%	26%
Antalaha	25%	1%	0%	14%	22%	31%	32%
Antsirabe II	31%	0%	4%	11%	36%	29%	19%
Beloha	11%	1%	15%	15%	18%	18%	32%
Benenitra	17%	0%	4%	19%	25%	27%	25%
Betafo	7%	0%	3%	18%	24%	22%	33%
Betioky Atsimo	22%	0%	10%	22%	21%	29%	18%
Farafangana	15%	0%	1%	15%	24%	33%	26%
Faratsiho	8%	3%	1%	17%	42%	15%	22%
Fenoarivo Atsinanana	18%	1%	1%	15%	42%	15%	25%
Mahanoro	24%	0%	8%	21%	29%	26%	15%
Manakara	17%	0%	3%	21%	21%	33%	22%
Mananjary	21%	0%	1%	21%	39%	24%	15%
Marovoay	17%	0%	1%	11%	31%	29%	28%
Morombe	17%	0%	4%	21%	29%	30%	17%
Nosy Varika	15%	0%	4%	17%	26%	25%	28%
Soanierana Ivongo	14%	0%	10%	17%	28%	22%	24%
Taolagnaro	19%	0%	7%	14%	21%	32%	26%
Toamasina II	24%	0%	6%	25%	38%	17%	15%
Toliary II	6%	0%	1%	24%	32%	31%	13%
Tsihombe	15%	0%	4%	19%	26%	29%	21%
Vatomandry	13%	0%	11%	22%	25%	25%	17%
Vavatenina	14%	0%	6%	24%	40%	17%	13%
Vohémar	24%	0%	6%	24%	32%	21%	18%
Vohipeno	13%	0%	1%	13%	22%	24%	40%

Table 4 – Additional Household Characteristics by District

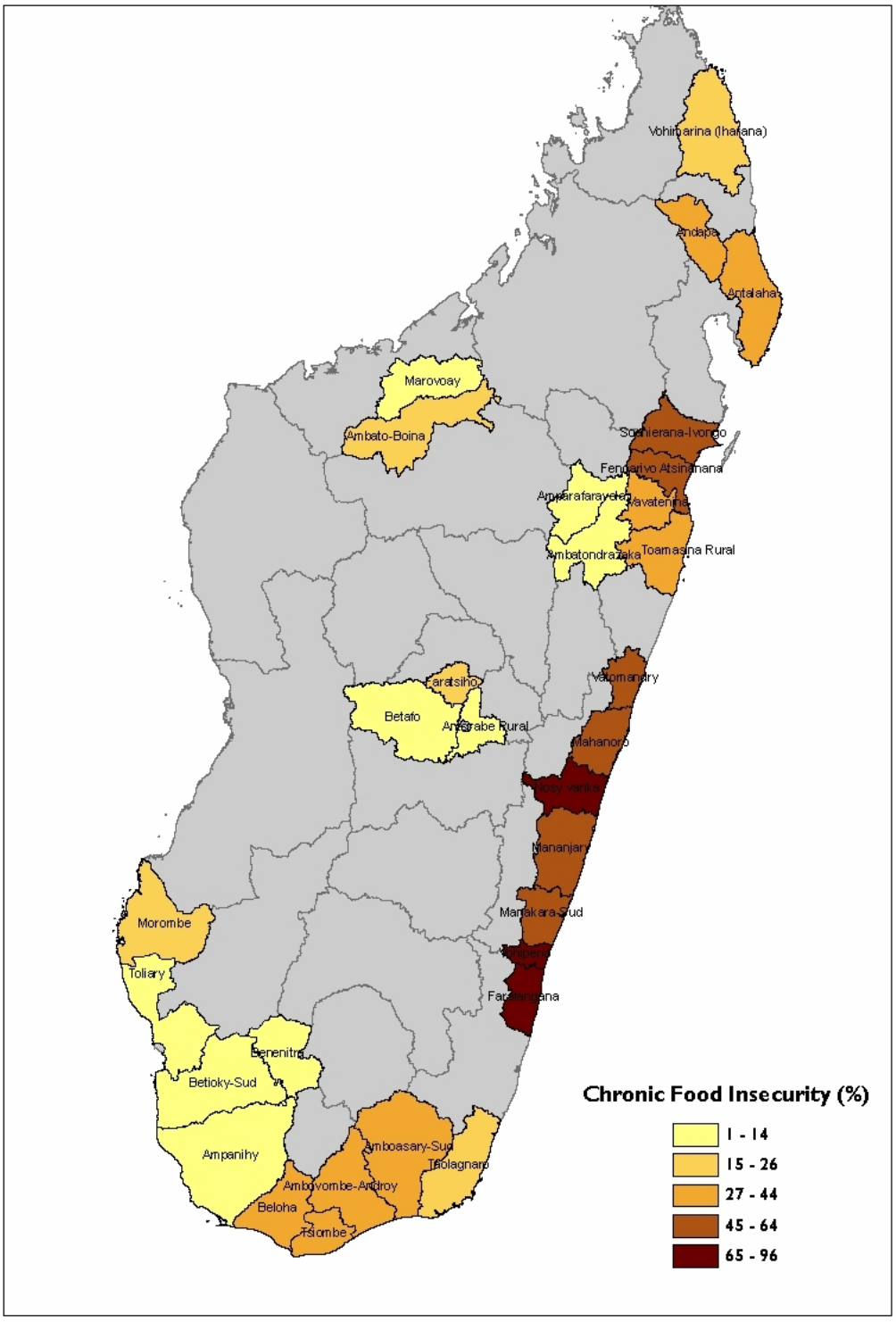
	Household size					Median HH size	CI member	Recent death
	1 person	2 to 3	4 to 6	7 to 9	10 or more			
Ambato Boeny	1%	19%	47%	22%	10%	5	19%	4%
Ambatondrazaka	0%	28%	50%	19%	3%	5	8%	4%
Amboasary Atsimo	1%	13%	39%	33%	14%	6	17%	3%
Ambovombe	4%	14%	40%	22%	19%	6	6%	8%
Ampanihy	1%	22%	32%	31%	14%	6	19%	3%
Amparafaravola	3%	14%	57%	25%	1%	5	13%	3%
Andapa	1%	13%	44%	35%	7%	6	18%	4%
Antalaha	1%	25%	47%	24%	3%	5	7%	4%
Antsirabe II	0%	14%	57%	24%	6%	5	14%	1%
Beloha	0%	14%	32%	32%	22%	7	19%	4%
Benenitra	0%	19%	38%	19%	25%	6	13%	2%
Betafo	0%	17%	53%	25%	6%	5	29%	6%
Betioky Atsimo	0%	22%	35%	31%	13%	6	17%	4%
Farafangana	3%	13%	39%	22%	24%	6	11%	1%
Faratsiho	1%	11%	54%	22%	11%	6	36%	4%
Fenoarivo Atsinanana	3%	33%	54%	10%	0%	4	13%	3%
Mahanoro	4%	25%	49%	17%	6%	5	10%	1%
Manakara	0%	7%	43%	36%	14%	6.5	14%	1%
Mananjary	0%	18%	57%	25%	0%	5	8%	6%
Marovoay	0%	11%	51%	25%	13%	6	21%	11%
Morombe	1%	12%	41%	35%	10%	6	8%	5%
Nosy Varika	1%	3%	49%	40%	7%	6	8%	3%
Soanierana Ivongo	3%	26%	51%	19%	0%	4.5	3%	10%
Taolagnaro	6%	15%	50%	22%	7%	5	13%	4%
Toamasina II	3%	264%	58%	11%	1%	4	14%	4%
Toliary II	0%	6%	40%	46%	8%	7	19%	3%
Tsihombe	1%	11%	36%	25%	26%	7	7%	3%
Vatomandry	1%	21%	58%	15%	4%	5	8%	6%
Vavatenina	3%	24%	58%	11%	4%	5	13%	8%
Vohémar	4%	26%	39%	22%	8%	5	29%	14%
Vohipeno	0%	13%	53%	26%	8%	6	11%	3%

Table 6 – Food Security Classification by District

	Food secure	FS - vulnerable	Chronic FI - poor	Food Insecure
Ambato Boeny	76%	0%	22%	1%
Ambatondrazaka	81%	4%	11%	4%
Amboasary Atsimo	11%	14%	38%	38%
Ambovombe	4%	14%	39%	43%
Ampanihy	13%	33%	4%	50%
Amparafaravola	85%	1%	11%	3%
Andapa	53%	4%	40%	3%
Antalaha	44%	8%	44%	3%
Antsirabe II	65%	18%	10%	7%
Beloha	10%	25%	38%	28%
Benenitra	25%	21%	6%	48%
Betafo	75%	14%	8%	3%
Betioky Atsimo	22%	10%	1%	67%
Farafangana	24%	0%	74%	3%
Faratsiho	67%	10%	22%	1%
Fenoarivo Atsinanana	49%	3%	49%	0%
Mahanoro	43%	1%	49%	7%
Manakara	40%	0%	60%	0%
Mananjary	15%	8%	64%	13%
Marovoay	83%	6%	10%	1%
Morombe	38%	18%	18%	26%
Nosy Varika	1%	1%	96%	1%
Soanierana Ivongo	46%	0%	54%	0%
Taolagnaro	67%	4%	26%	3%
Toamasina II	57%	6%	33%	4%
Toliary II	33%	24%	14%	29%
Tsihombe	1%	11%	44%	43%
Vatomandry	33%	8%	56%	3%
Vavatenina	63%	1%	36%	0%
Vohémar	36%	32%	19%	13%
Vohipeno	19%	3%	75%	3%

Annex II – Food Security Maps by District

Map 1 – Chronic Food Insecure – Poor by District



Map 2 – Food Insecure by District