

Interim Report: Cross-Sectional Survey 4

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Demographics

Household demographic characteristics are displayed in Table 1. There were significant differences between household size in the comparison groups, a finding similar to that of the enrollment survey and CSS2. WEG households were the largest (mean: 7.2 persons), whereas F2F households were the smallest (mean: 6.1 persons). The median was 6 or 7 persons per household for each comparison group. WEG households also had a significantly greater number of persons moving into the household (mean: 0.5 persons) compared to other groups. The number of persons moving out was greatest among WEG and PM2A households (mean: 0.2 persons per household), a significantly greater number than other groups. There were no differences in the number of births or deaths between the groups, nor were there differences in the net change of household size.

Table 2 displays household economic characteristics. Significant differences in monthly income were observed, with FFS households having the highest monthly income (mean: 27626 CHF) and control households having the lowest monthly income (mean: 17968 CHF). In contrast, WEG households had the most savings (mean: 4396 CHF) and control households had the least savings (mean: 1483 CHF). There were no differences in the proportion of households that had savings between the groups. The amount saved, the amount of savings spent, and the amount of assets sold in the past month also did not vary between groups.

Household Dietary Diversity

The number of meals consumed on the day preceding the survey is shown in Table 3. The number of meals was similar between all comparison groups, with households in each group consuming an average of 1.5-1.5 meals per day. Approximately half of the households in each group consumed one or less meals per day, a proportion that did not vary between groups. There were also no differences in the mean or median household dietary diversity score (HDDS) between groups: the median HDDS was 3.0 in each group and the mean HDDS ranged from 3.5 and 3.8. The proportion of households consuming foods made from grains was highest among the PM2A group (36.1%) and lowest among the F2F group (20.8%). WEG households were more likely to consume sugar or honey (9.7% of households)

or other foods such as condiments, coffee, or tea (18.1% of households) compared to other groups. There were no other significant differences in the proportion of households consuming specific food groups between the comparison groups. Roots and tubers were the most commonly consumed food group, followed by vegetables and foods made from grains.

Months of Adequate Food Provisioning

Between 96.9% and 98.5% of households reported not having enough food to eat in one or months in the preceding year (Table 4). The mean number of months varied significantly between groups, with WEG and Control households reporting the highest number of months of inadequate food provisioning (mean: 3.4 months). The median number of months of inadequate food provisioning was 3.0 for all groups. There were significant differences in the proportion of households reporting inadequate food provisioning in the months of April, May, and November. There were no differences between groups for all other months. Households most commonly reported not having enough food to eat during the months of May, June, July, and August.

Household Food Insecurity

Several measures of household food insecurity were nearly universal among households in each comparison group: worrying about insufficient food, not being able to eat preferred foods due to lack of resources, eating undesirable foods due to lack of resources, eating smaller meals than needed due to lack of food, and eating fewer meals in a day due to lack of food were applied to approximately 95% or more of households in each comparison group (Table 5). Individual measures of household food insecurity most often did not vary between groups, with one exception being the proportion of households worried about insufficient food in the month preceding the survey: this proportion was lowest among the FFS group (93.8%) and highest among the F2F group (98.8%).

Aggregate measures of household food insecurity are displayed in Table 6. Risk in each domain was nearly ubiquitous, with approximately 98% of households in each group at risk. FFS households were slightly less likely to be at risk in the anxiety and uncertainty domain compared to other groups. There were no differences between groups in the proportion of households at risk in the insufficient quality domain and the insufficient intake and its physical consequences domain. Household food insecurity access score (HFIAS) also did not vary between the groups. The great majority of households in each group were classified as severely food insecure (89.9% to 93.6%) with most of the remaining households classified as moderately food insecure (6.1% to 9.8%).

Children's Diet

The diversity and frequency of children ages 6 to 24 months is displayed in Table 7. The mean and median minimum dietary diversity score was similar between groups, with all groups having a median score of 2.0 and a mean score between 2.1 and 2.3. The proportion achieving minimum dietary diversity was also similar between groups (range: 4.2-12.3%), although there was a trend towards a higher proportion achieving minimum dietary diversity in the F2F group. The proportion achieving minimum dietary diversity was generally higher among children ages 18-24 months compared to children in younger age groups. There were no differences in the proportion achieving minimum meal frequency in each comparison group (range: 12.3-19.8%), and higher proportions of younger children

age 6-11 months achieved the minimum meal frequency compared to older children. The proportion of children achieving a minimum acceptable diet, a combination of the minimum dietary diversity and minimum meal frequency indicators, was very low in all groups (range 0.0%-2.1%). There were no differences in the proportion achieving minimum acceptable diet between groups.

Children's Nutritional Status

Table 8 shows child anthropometric data separated by comparison group. Prevalence of acute malnutrition, as assessed by weight-for-height z-score, was 0.5% to 5.4% in the different comparison groups. Prevalence of acute malnutrition differed significantly between groups, with the highest prevalence in the control group and the lowest prevalence in the WEG group. Prevalence of chronic malnutrition, as assessed by height-for-age z-scores, ranged from 52.6% to 60% with no significant difference between groups. Underweight, measured by weight-for-age z-score, was most prevalent in control children (27.6%), ranging between 15.0% and 24.7% in other groups. The mean z-scores for weight-for-height, height-for-age, and weight-for-age also differed significantly, with control children having the lowest weight-for-height z-score (-0.2) and F2F children having the lowest height-for-age (-2.6) and weight-for-age z-scores (-1.4).

Table 9 and table 10 display children's nutritional status separated by sex and age, respectively. Male children had a significantly higher prevalence of stunting and a higher prevalence of underweight, but there was no difference in the prevalence of wasting between males and females. Male children did have a significantly lower weight-for-height z-score (0.0) compared to female children, in addition to lower height-for-age and weight-for-age z-scores. With regards to age, the prevalence of wasting was highest among children age 6-11 months (4.7%) and the prevalence of wasting generally decreased in each older age group. In contrast, children 6-11 months had a significantly lower prevalence of stunting (39.8%) compared to older children in older age groups. There were no differences in the prevalence of underweight between age groups.

Table 1. Household demographic characteristics of each comparison group

		WEG (N=298)	PM2A (N=346)	FFS (N=352)	F2F (N=337)	Control (N=255)	p- value*
Household size	Median	7.0	7.0	7.0	6.0	6.0	---
	Mean	7.2	7.0	6.8	6.1	6.8	<0.001
Persons moving into household	% reporting move in(s)	21.1%	17.1%	16.8%	14.8%	14.5%	0.207
	Mean	0.5	0.3	0.4	0.3	0.3	<0.001
Persons moving out of household	% reporting move out(s)	9.7%	9.2%	9.1%	7.7%	9.4%	0.916
	Mean	0.2	0.2	0.1	0.1	0.1	0.030
Births in the household	% reporting a birth(s)	10.4%	14.7%	14.5%	12.8%	11.8%	0.439
	Mean	0.1	0.1	0.2	0.1	0.1	0.352
Deaths in the household	% reporting death(s)	3.4%	2.0%	2.8%	2.1%	2.0%	0.743
	Mean	0.0	0.0	0.0	0.0	0.0	0.758
Net change in household size	Median	0.0	0.0	0.0	0.0	0.0	---
	Mean	0.3	0.3	0.4	0.3	0.3	0.794

*four group comparison using Pearson's chi-square for proportions and t-test for means (adjusted for clustering)

Table 2. Household economic characteristics of each comparison group (reported in Congolese Francs)

		WEG (N=298)	PM2A (N=346)	FFS (N=352)	F2F (N=337)	Control (N=255)	p- value*
Household income in the past month	Median	15000	10000	16750	10000	10000	---
	Mean	21346	20589	27626	19735	17968	0.014
Savings	% with any savings	17.8%	12.1%	14.2%	14.2%	10.2%	0.104
	Median	0	0	0	0	0	---
	Mean	4396	2217	3531	2240	1483	0.038
Savings within the past month	% reporting saving	17.8%	12.1%	14.2%	14.2%	10.2%	0.104
	Median	0	0	0	0	0	---
	Mean	1822	1670	2303	1727	1710	0.867
Spending of savings with the past month	% reporting spending	17.8%	12.1%	14.2%	14.2%	10.2%	0.104
	Median	0	0	0	0	0	---
	Mean	1967	2323	2597	2300	1619	0.7697
Asset sales within the past month	% reporting sales	30.2%	27.5%	28.4%	26.1%	22.7%	0.356
	Median	0	0	0	0	0	---
	Mean	6776	5328	6852	6147	3724	0.130

*four group comparison using Pearson's chi-square for proportions and t-test for means (adjusted for clustering)

Table 3. Household Dietary Diversity

	WEG (N=298)	PM2A (N=346)	FFS (N=352)	F2F (N=337)	Control (N=)	p- value*
Number of meals consumed on the preceding day						
Median	2	1	2	2	2	---
Mean	1.6	1.5	1.6	1.5	1.5	0.982
% Consuming ≤ 1 meal/day	50.3%	48.9%	54.3%	54.3%	50.2%	0.490
Household Food Consumption on the Preceding Day (reported as % of households consuming foods in each category)						
Breads, rice, noodles or foods made from grains	30.2%	36.1%	24.4%	20.8%	29.0%	<0.001
Roots and tubers	97.3%	95.4%	96.3%	98.2%	94.9%	0.150
Vegetables	80.2%	82.1%	81.5%	81.9%	78.4%	0.787
Fruits	10.1%	9.0%	6.0%	5.9%	5.5%	0.097
Meat or poultry	6.4%	4.6%	5.4%	3.9%	2.0%	0.125
Eggs	2.7%	2.9%	1.1%	3.0%	0.8%	0.172
Fish or seafood	44.6%	39.6%	43.8%	45.1%	43.1%	0.623
Beans, peas, lentils or nuts	20.1%	19.9%	20.7%	19.6%	20.8%	0.995
Dairy products	1.0%	2.6%	1.4%	1.2%	1.6%	0.500
Oil, butter or fat	55.0%	59.0%	61.4%	59.9%	54.9%	0.365
Sugar or honey	9.7%	6.1%	4.3%	4.7%	9.0%	0.015
Other foods such as condiments, coffee or tea	18.1%	10.1%	10.8%	12.8%	14.1%	0.024
Household Dietary Diversity Score (HDDS)						
Median	3	3	3	3	3	---
Mean	3.8	3.7	3.6	3.6	3.5	0.410

*four group comparison using Pearson's chi-square for proportions and t-test for means (adjusted for clustering)

Table 4. Months of Adequate Food Provisioning

		WEG (N=298)	PM2A (N=335)	FFS (N=341)	F2F (N=322)	Control (N=249)	p- value*
Households reporting not enough food to eat in one or more months of the preceding year	Percent	98.0%	96.8%	96.9%	98.5%	97.6%	0.558
	Median months	3	3	3	3	3	---
	Mean months	3.4	3.3	3.0	3.1	3.4	0.002
Households reporting not enough food to eat by month in the preceding year	January	14.7%	13.7%	10.6%	7.8%	10.8%	0.051
	February	16.1%	13.4%	14.1%	9.6%	11.6%	0.158
	March	19.2%	14.3%	14.9%	13.6%	15.3%	0.352
	April	39.0%	27.8%	32.0%	31.0%	33.7%	0.046
	May	42.5%	34.3%	35.8%	31.0%	41.4%	0.017
	June	48.3%	44.2%	40.2%	40.6%	47.8%	0.126
	July	48.3%	60.0%	51.9%	52.7%	54.2%	0.053
	August	45.5%	53.1%	46.9%	51.8%	55.0%	0.100
	September	33.2%	34.9%	30.8%	32.2%	34.5%	0.796
	October	19.2%	20.0%	15.0%	19.9%	20.5%	0.359
	November	13.0%	14.6%	7.0%	13.0%	12.4%	0.029
	December	10.6%	10.1%	6.5%	8.7%	12.4%	0.135

*four group comparison using Pearson's chi-square for proportions and t-test for means (adjusted for clustering)

Table 5. Household Food Insecurity Access Conditions (month preceding the survey)

		WEG (N=298)	PM2A (N=346)	FFS (N=352)	F2F (N=337)	Control (N=255)	p- value*
Worried about insufficient food	Percent	96.6%	95.1%	93.8%	98.8%	95.3%	0.013
Frequency of occurrence within the past month	Rarely (1-2 times)	15.3%	11.6%	16.1%	13.2%	11.1%	0.167
	Sometimes (3-10 times)	49.3%	50.2%	51.2%	55.0%	59.3%	
	Often (>10 times)	35.4%	38.3%	32.7%	31.8%	29.6%	
Could not eat preferred foods due to lack of resources	Percent	96.3%	96.5%	96.3%	97.3%	97.6%	0.830
Frequency of occurrence within the past month	Rarely (1-2 times)	11.8%	8.7%	13.9%	11.6%	8.8%	0.048
	Sometimes (3-10 times)	52.6%	50.6%	48.1%	58.2%	57.0%	
	Often (>10 times)	35.5%	40.7%	38.1%	30.2%	34.1%	
Ate limited variety of foods due to lack of resources	Percent	90.9%	92.2%	91.8%	94.4%	95.7%	0.149
Frequency of occurrence within the past month	Rarely (1-2 times)	11.1%	9.4%	11.5%	13.5%	13.5%	0.332
	Sometimes (3-10 times)	55.0%	60.8%	52.0%	56.3%	57.0%	
	Often (>10 times)	33.9%	29.8%	36.5%	30.2%	29.5%	
Ate undesirable foods due to lack of resources	Percent	96.3%	97.7%	96.3%	98.2%	98.8%	0.188
Frequency of occurrence within the past month	Rarely (1-2 times)	12.5%	9.8%	14.2%	13.0%	10.3%	0.229
	Sometimes (3-10 times)	53.0%	61.2%	50.1%	53.8%	56.7%	
	Often (>10 times)	34.5%	29.0%	35.7%	33.2%	32.9%	
Ate smaller meals than needed due to lack of food	Percent	96.0%	96.8%	95.7%	97.6%	97.3%	0.619
Frequency of occurrence within the past month	Rarely (1-2 times)	17.8%	11.6%	15.4%	12.2%	11.3%	0.107
	Sometimes (3-10 times)	57.3%	67.2%	57.9%	61.7%	61.7%	
	Often (>10 times)	24.8%	21.2%	26.7%	26.1%	27.0%	
Ate fewer meals in a day due to lack of food	Percent	95.0%	96.5%	93.2%	94.7%	95.7%	0.348
Frequency of occurrence within the past month	Rarely (1-2 times)	19.8%	17.4%	19.2%	15.7%	17.6%	0.077
	Sometimes (3-10 times)	56.2%	64.1%	54.9%	66.5%	61.5%	
	Often (>10 times)	24.0%	18.6%	25.9%	17.9%	20.9%	
No food in household due to lack of resources	Percent	73.2%	79.8%	73.0%	75.4%	79.2%	0.123
Frequency of occurrence within the past month	Rarely (1-2 times)	29.8%	25.7%	28.4%	32.3%	22.8%	0.008
	Sometimes (3-10 times)	49.5%	57.6%	44.7%	52.4%	57.9%	
	Often (>10 times)	20.6%	16.7%	26.8%	15.4%	19.3%	
Went to sleep hungry due to lack of food	Percent	77.9%	83.8%	77.3%	78.3%	80.4%	0.204
Frequency of occurrence within the past month	Rarely (1-2 times)	36.6%	42.4%	45.6%	43.6%	37.6%	0.543
	Sometimes (3-10 times)	53.4%	48.6%	44.1%	46.2%	51.7%	
	Often (>10 times)	9.9%	9.0%	10.3%	10.2%	10.7%	
Went entire day and night without eating due to lack of food	Percent	51.0%	53.2%	53.1%	57.9%	56.5%	0.422
Frequency of occurrence within the past month	Rarely (1-2 times)	49.3%	48.9%	52.9%	60.5%	62.5%	0.176
	Sometimes (3-10 times)	42.8%	42.9%	40.1%	34.9%	32.6%	
	Often (>10 times)	7.9%	8.2%	7.0%	4.6%	4.9%	

*four group comparison using Pearson's chi-square (adjusted for clustering)

Table 6. Household Food Insecurity Access Measures (month preceding the survey)

	WEG (N=298)	PM2A (N=346)	FFS (N=352)	F2F (N=337)	Control (N=255)	p- value*
<i>Household Food Insecurity Access Domains</i>						
At risk in anxiety and uncertainty domain (%)	96.6%	95.1%	93.8%	98.8%	95.3%	0.013
At risk in insufficient quality domain (%)	98.0%	98.8%	97.4%	99.1%	99.2%	0.271
At risk in insufficient intake and its physical consequences domain (%)	98.0%	98.3%	97.2%	98.2%	98.8%	0.663
<i>Household Food Insecurity Access Score (0-27)</i>						
Median	16.5	16.0	16.0	16.0	16.0	---
Mean	15.9	16.3	15.9	16.0	16.3	0.642
<i>Household Food Insecurity Access Prevalence</i>						
Food Secure (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.584
Mildly Food Insecure (%)	0.3%	0.3%	0.9%	0.3%	0.0%	
Moderately Food Insecure (%)	9.8%	6.1%	8.4%	8.7%	7.5%	
Severely Food Insecure (%)	89.9%	93.6%	90.8%	91.0%	92.5%	

*four group comparison using Pearson's chi-square (adjusted for clustering)

Table 7. Children's diet, including diversity and frequency (children born between 7/1/12 and 12/31/12)

	WEG (N=94)	PM2A (N=216)	FFS (N=91)	F2F (N=81)	Control (N=124)	p- value*
<i>Minimum Dietary Diversity score</i>						
Median	2.0	2.0	2.0	2.0	2.0	---
Mean	2.1	2.1	2.1	2.3	2.1	0.601
<i>Proportion achieving Minimum Dietary Diversity</i>						
All age groups 6-24 months	4.3%	4.2%	4.4%	12.3%	5.6%	0.079
6-11 months	3.4%	4.3%	3.6%	7.7%	3.2%	0.969
12-17 months	0.0%	1.3%	0.0%	13.2%	7.3%	0.009
18-24 months	9.4%	7.0%	10.0%	13.3%	5.8%	0.785
<i>Proportion achieving Minimum Acceptable Meal Frequency</i>						
All age groups 6-24 months	17.0%	19.8%	16.5%	12.3%	16.1%	0.640
6-11 months	27.6%	32.9%	35.7%	46.2%	25.8%	0.700
12-17 months	12.1%	19.7%	9.1%	7.9%	7.3%	0.225
18-24 months	12.5%	7.0%	6.7%	3.3%	17.3%	0.202
<i>Proportion achieving Minimum Acceptable Diet</i>						
All age groups 6-24 months	2.1%	0.0%	1.1%	1.2%	0.8%	0.405
6-11 months	0.0%	0.0%	3.6%	7.7%	0.0%	0.102
12-17 months	0.0%	0.0%	0.0%	0.0%	0.0%	1.000
18-24 months	6.3%	0.0%	0.0%	0.0%	1.9%	0.114

*four group comparison using Pearson's chi-square for proportions and t-test for means (adjusted for clustering)

Table 8. Children's Nutrition Status (children born between 7/1/12 and 12/31/12)

	WEG (N=209)	PM2A (N=340)	FFS (N=164)	F2F (N=146)	Control (N=185)	p- value*
<i>Mid-Upper Arm Circumference</i>						
Mean	14.8	14.6	14.5	14.4	14.4	0.010
Median	14.6	14.5	14.5	14.5	14.5	---
MUAC < 11.5 cm (%)	0.0%	1.5%	0.6%	1.4%	2.2%	0.299
MUAC 11.5-12.5 cm (%)	1.0%	1.8%	2.4%	2.1%	3.2%	0.581
<i>Prevalence of Wasting (weight for height)</i>						
Mean z-score	0.1	0.1	0.0	0.0	-0.2	0.006
Wasting (<-2 Z)	0.5%	2.9%	1.8%	2.7%	5.4%	0.046
Moderate wasting (-2Z to -3Z)	0.5%	2.4%	1.8%	2.7%	3.8%	0.252
Severe wasting (<-3Z)	0.0%	0.6%	0.0%	0.0%	1.6%	0.105
<i>Prevalence of Stunting (height for age)</i>						
Mean z-score	-2.1	-1.9	-2.3	-2.6	-2.3	<0.001
Stunting (<-2 Z)	59.3%	52.6%	62.2%	65.8%	60.0%	0.058
Moderate stunting (-2Z to -3Z)	30.1%	32.6%	32.3%	30.1%	30.8%	0.963
Severe stunting (<-3Z)	29.2%	20.0%	29.9%	35.6%	29.2%	0.040
<i>Prevalence of Underweight (weight for age)</i>						
Mean z-score	-1.1	-0.9	-1.2	-1.4	-1.3	<0.001
Underweight (<-2 Z)	20.6%	15.0%	20.1%	24.7%	27.6%	0.009
Moderate underweight (-2Z to -3Z)	15.3%	10.0%	12.2%	15.1%	17.3%	0.135
Severe underweight (<-3Z)	5.3%	5.0%	7.9%	9.6%	10.3%	0.103

*four group comparison using Pearson's chi-square for proportions and t-test for means (adjusted for clustering)

Table 9. Children's Nutrition Status (children born between 7/1/12 and 12/31/2012)

	Females (N=516)	Males (N=528)	p- value*
Mid-Upper Arm Circumference			
Mean	14.5	14.6	0.085
Median	14.5	14.6	---
MUAC < 11.5 cm (%)	0.8%	1.1%	0.549
MUAC 11.5-12.49 cm (%)	2.5%	1.5%	0.248
Prevalence of Wasting (weight for height)			
Mean z-score	0.1	0.0	0.040
Wasting (<-2 Z)	1.9%	3.4%	0.141
Moderate wasting (-2Z to -3Z)	1.9%	2.5%	0.564
Severe wasting (<-3Z)	0.0%	0.9%	0.027
Prevalence of Stunting (height for age)			
Mean z-score	-1.9	-2.4	<0.001
Stunting (<-2 Z)	52.1%	64.9%	<0.001
Moderate stunting (-2Z to -3Z)	32.1%	30.7%	0.604
Severe stunting (<-3Z)	20.0%	34.3%	<0.001
Prevalence of Underweight (weight for age)			
Mean z-score	-1.0	-1.3	<0.001
Underweight (<-2 Z)	15.5%	25.4%	<0.001
Moderate underweight (-2Z to -3Z)	10.3%	16.5%	0.003
Severe underweight (<-3Z)	5.2%	8.9%	0.021

*four group comparison using Pearson's chi-square for proportions and t-test for means (adjusted for clustering)

Table 10. Children's Nutrition Status (children born between 7/1/2012 and 12/31/12)

	Age 6-11 months (N=171)	Age 12-17 months (N=221)	Age 18-23 months (N=215)	Age 24-29 months (N=247)	Age 30-36 months (N=136)	p- value*
Mid-Upper Arm Circumference						
Mean	13.9	14.2	14.4	14.9	15.2	<0.001
Median	13.9	14.2	14.5	15.0	15.2	---
MUAC < 11.5 cm (%)	1.8%	2.7%	0.0%	0.4%	0.0%	0.018
MUAC 11.5-12.49 cm (%)	2.9%	2.7%	2.3%	1.6%	0.7%	0.643
Prevalence of Wasting (weight for height)						
Mean z-score	-0.2	-0.2	0.0	0.2	0.3	<0.001
Wasting (<-2 Z)	4.7%	5.0%	1.9%	1.6%	0.7%	0.039
Moderate wasting (-2Z to -3Z)	2.9%	4.1%	1.9%	1.6%	0.7%	0.239
Severe wasting (<-3Z)	1.8%	0.9%	0.0%	0.0%	0.0%	0.060
Prevalence of Stunting (height for age)						
Mean z-score	-1.3	-2.3	-2.2	-2.4	-2.4	<0.001
Stunting (<-2 Z)	39.8%	60.6%	57.7%	64.4%	63.2%	<0.001
Moderate stunting (-2Z to -3Z)	22.2%	34.4%	30.2%	33.2%	38.2%	0.027
Severe stunting (<-3Z)	17.5%	26.2%	27.4%	31.2%	25.0%	0.039
Prevalence of Underweight (weight for age)						
Mean z-score	-0.9	-1.3	-1.1	-1.1	-1.1	0.162
Underweight (<-2 Z)	22.2%	22.2%	20.5%	17.4%	16.9%	0.548
Moderate underweight (-2Z to -3Z)	13.5%	14.5%	12.1%	11.7%	12.5%	0.913
Severe underweight (<-3Z)	8.8%	7.7%	8.4%	5.7%	4.4%	0.457

*four group comparison using Pearson's chi-square for proportions and t-test for means (adjusted for clustering)