Monitoring the impacts of COVID19 on affordable diets: Real-Time Cost of the Diet and Household Economic Analysis pilot Zinder, Niger Results Brief

Introduction

Purpose of the pilot, brief and audience:

The COVID-19 pandemic has disrupted food supply chains and economic systems worldwide. With countries facing disrupted livelihoods, restricted movements, disrupted markets, border closures and rising food prices, this study aimed to understand how these disruptions may have impacted cost and affordability of the diet. The pilot aimed to leverage existing price data to adapt the HEA and CotD methodologies for real-time monitoring of the cost and affordability of a nutritious diet changes over time in the context of the COVID-19 pandemic. This brief presents key learnings for policy makers and technical learnings for practitioners.

Cost of the Diet (CotD)

The CotD[1] is an innovative method and software developed by Save the Children UK to estimate the amount and combination of local foods that are needed to provide a typical family with a diet that meets their average needs for energy and their recommended intakes of protein, fat and micronutrients.

Household Economy Analysis (HEA)

HEA[2] is a livelihoods framework that assesses and quantifies different households' food, income and expenditure sources to identify if they have enough resources to meet their food and non-food needs. It has modeling capacity and can predict how a change (positive or negative) will impact households' abilities to access their typical food and cash sources. HEA has two main components:

1) **Baseline analysis** – the analysis of how people get by in a typical (non-shock) year (called the reference year) and the connections with other people and places that enable them to do so, and
2) **Outcome analysis (OA) -** the investigation of how that baseline access to food and income will likely change as a result of a specific hazard such as drought or as the result of a positive change, such as a program input or beneficial price policy.

HEA and CotD are interlinked and complementary. In this pilot, HEA has been used to assess the affordability of the diets produced by CotD.

Location of study:	Damagaram Takaya Department in Zinder region which is part of the DTK northern Agropastoral livelihood zone in the larger Agropastoral Belt.

[1] For more information please see https://www.heacod.org/en-gb/Pages/AboutCotD.aspx

[2] For more information on the method, please see: https://resourcecentre.savethechildren.net/library/household-economy-approach-guide-programme-planners-and-policy-makers

Period of study:	January 2020 - April 2021 (monthly data collection from November 2020 to April 2021)		
Methods: • Market price data collection and price recall[3] on a select number of foods from January 2020 to April 2021[4] • Analysis and cost of the diet modelling using the Cost of the Diet Software • One diet was analysed - **a nutritious diet** adequate in energy and nutrients for a typical household adjusted for the usual consumption of millet and sorghum[5] • Projected annual income updated using Household Economy Analysis (HEA) monitoring data collected through focus groups • Analysis is only for the very poor wealth group which typically has 6 people in the household[6]		**6-Person Household:** • Breastfed child 12-23 months • Child, 7-8 years • Child, 9-10 years • Child, 11-12 years • Man, 30-59 years, 50kg, moderately active • Breastfeeding Woman, 30-59 years, moderately active	**4 Markets:** • Damagaram Takaya • Guidimouni • Guidiguir • Kassama
Adaptations to CotD methodology	• Use of a shortened food list of typically consumed nutritious foods • CotD analysis was conducted monthly instead of per season • Food habit constraints were limited for usual consumption of staples and cowpeas only using existing focus group discussion data		
Adaptations to HEA methodology	• The annual income was updated using averaged monthly field monitoring data of off-farm income generating activities between October 2020 and April 2021.		
Limitations	The cost of the diet calculated in this study may not actually reflect the lowest possible cost since a shortened food list has been used and data was collected in a limited number of markets. The study was not located in the areas of the country that were worst hit by COVID-19.		

KEY RESULTS

Part 1: Composition of a nutritious diet for a household of six people

Foods Selected

- The price monitoring data from the national system for agriculture market information in Niger, or SIMA could not be used to produce cost of a nutritious diet because certain required food groups are not covered in their monitoring. The food groups absent were meats and offals, milk products, fish, and vegetables. As a result, Save the

[3]Price recall was obtained for January 2020-October 2020.

[4]This overlaps with two consumption years. Each consumption year is from October to September, starting with the main harvest period, as defined in the HEA baseline analysis.

[5]For a child aged 12-23 months, it is assumed millet and sorghum is eaten at least four and three times a week respectively. For the rest of the family, millet and sorghum is eaten at least once a day.

[6] As defined by the HEA baseline analysis

Children collected availability and market prices from Damagaram Takaya, Guidimouni, Guidiguir, and Kassama markets starting in November 2020 for 39 foods. Data collection continued monthly until April 2021. The food selection was guided by a Fill the Nutrient gap analysis conducted by the World Food Programme in October 2019 conducted in the same markets, as well as Save the Children's Food Security and Nutrition technical advisors who have ample knowledge of the local context. During the data collection period, fruits were not readily available in the markets.

- The lowest-cost annual diet that is adequate in nutrients for a family of six, taking into account the typical consumption of millet and sorghum, consists of 18 foods with 8-14 foods per month. Table 1 illustrates the foods selected in this diet and how they vary across the months.

- The main sources of grains are millet and sorghum. The diet also includes cassava and sweet potatoes, although not consistently throughout the study period. The five types of legumes, nuts and seeds are peanuts, white beans, farine de tourteau, tourteaux and sesame seeds. In several of the months, the cow milk curds, and liver from beef, goat and mutton were included. The main vegetables that have been included are dried sorrel leaves, which are supplemented with dried baobab leaves in 11 out of 14 months. Unlike the rest of the year, onions are the only vegetable included in April 2021. Eggs are part of the diet between July 2020 and November 2020. Mutton liver is most consistently selected, but goat and beef liver are also part of the diet. In this diet, fruits and fish were not selected.

TABLE 1: FOODS SELECTED IN THE LOWEST COST NUTRITIOUS DIET

Food Group	Foods Included	2020												2021			
		Jan*	Feb*	Mar*	Apr*	May*	Jun*	Jul*	Aug*	Sep*	Oct*	Nov	Dec	Jan	Feb	Mar	Apr
Grains	Millet	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Sorghum	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Roots and tubers	Cassava tuber	■	■	■	■	■	■	■						■			
	Sweet potato, yellow,												■	■			■
Legumes nuts and seeds	Peanut shelled	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Farine de tourteaux	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Tourteaux	■	■	■	■	■	■	■		■	■	■	■	■			
	White bean	■	■	■	■	■	■	■	■	■	■	■					■
	Sesame seeds whole, dried and raw	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■
Meat and offals	Beef liver	■		■					■	■		■		■	■	■	
	Goat liver		■	■							■	■	■				
	Mutton liver	■	■	■	■	■	■	■	■	■	■	■	■		■		■

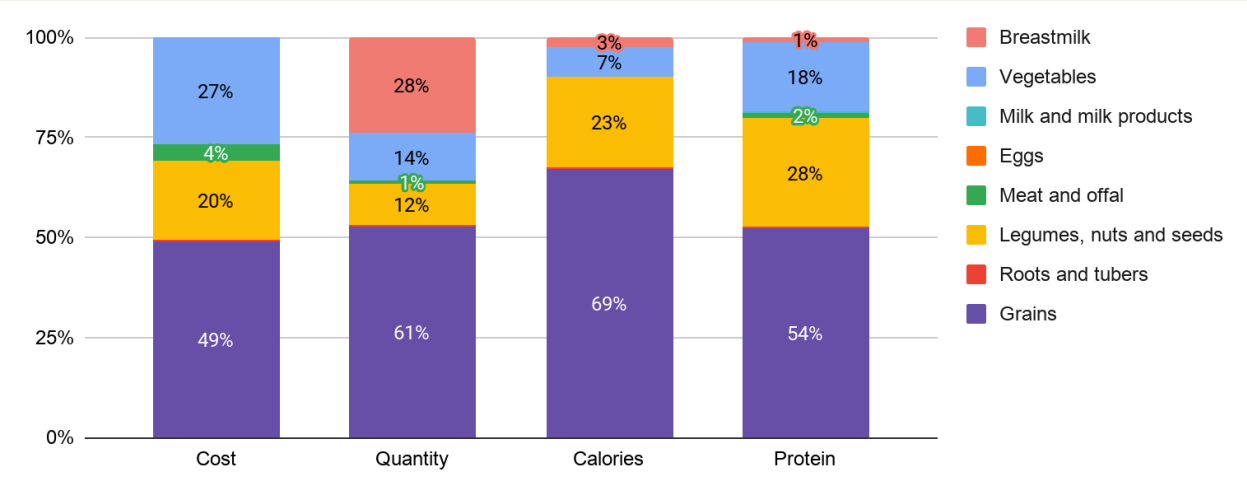
Eggs	Chicken eggs							■	■	■	■	■					
Milk and milk products	Cow milk curds												■	■			
Vegetables	Dried baobab leaf	■	■	■	■			■	■	■	■	■		■	■		
	Dried sorrel leaf	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
	Onion, raw														■	■	■
Breast milk	Breast milk	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Lean season			■	■	■	■	■	■	■	■						■	■

*Prices were obtained retrospectively through price recall with market traders

Food Group contribution to nutrients and cost

- Figure 1 illustrates the average food group contribution to the cost of the diet, quantity(kg), calories, and protein during the study period between January 2020 to April 2021. Cereals consist of the bulk of the diet by weight (61%), calories (69%), and protein (54%) and represent an important share of the cost (49%). Legumes are also important to the diet contributing 20% of the cost, 23% of calories and 28% of protein.

FIGURE 1: AVERAGE FOOD GROUP CONTRIBUTION TO THE COST OF THE DIET, CALORIES, AND PROTEIN FROM JANUARY 2020 TO APRIL 2021.



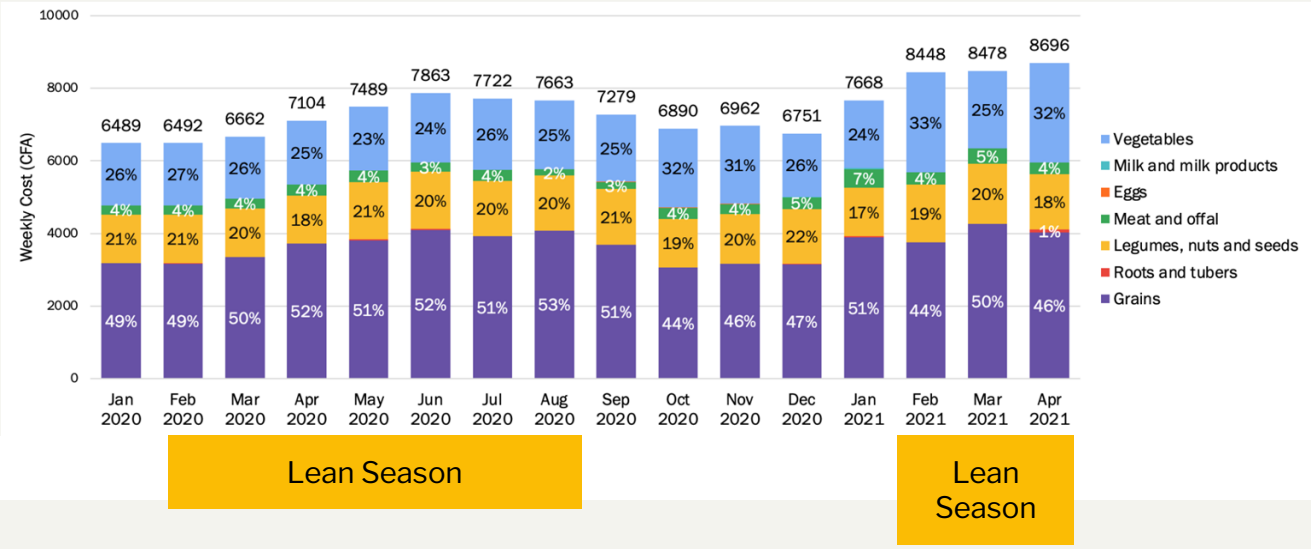
Part 2: How the cost and food group cost contribution of the diet changes by month from January 2020 to February 2021

- The cost of the diet per week ranged between 6489 to 8696 CFA[7] (927 to 1,242 CFA per day across the study period (Figure 2). The average weekly cost of the nutritious diet was 7249 CFA in the same period.

- The cost of the nutritious diet follows the seasonal calendar in the Agropastoral zone, with the cost of the diet rising in March and peaking during the height of the lean season[8] between June to August.[9] It then begins falling until October when millet, sorghum and cowpeas are harvested.

- By January 2021, the cost of the diet (7668 CFA weekly) increased to lean season prices in the previous year. By February 2021, the cost of the diet (8478 CFA weekly) exceeded the peak price in 2020 (7863 CFA weekly). FEWSNet reported that cereal prices in February 2021 were 30-40% higher in Zinder compared to the national five-year average.[10] This may be explained by the reduction of imported cereals from Nigeria linked to decreased production in Nigeria and disruptions in transportation due to insecurity and COVID-19 restrictions.[11]

FIGURE 2. WEEKLY COST (CFA) OF FOODS BY MONTH



*January to October price was based on a market price recall during the November data collection.

Part 3: Estimating income

- CotD analysis starts in January 2020, which falls part way through the October 2019 to September 2020 consumption year (as identified by the HEA baseline analysis). Therefore, income for two consumption years were included in the affordability analysis. The CotD analysis for January – September 2020 has been compared with the HEA projected annual total income for very poor households in DTK for the consumption year October 2019 to September 2020.

[7] The official exchange rate on 1 October 2021 was USD1 = 559 CFA.

[8] Lean season is February to September

[9] Rapport Profile Agropstorale de Watada : Profil de Moyens d'Existence de Zinder Nord Agropastorale ZNP 2018

[10] Fews Net. 2021. High commodity prices and insecurity continue to limit food access. March-May 2021

[11] Fews Net. 2021. West Africa Niger Food Security Outlook. An atypical price increase limiting household food access. February 2021. Fews Net. 2021. High commodity prices and insecurity continue to limit food access. March-May 2021

- In Niger, the OA is typically carried out twice per consumption year: once at the beginning of the consumption year just after the main harvest (usually November); and once around March when agriculture production data has been officialized by the government. For the purpose of this study, the March OA results were updated using HEA monitoring data from fieldwork covering off-farm income generating activities between October 2020 and April 2021.

TABLE 2: ANNUAL INCOME MINUS NON-FOOD EXPENDITURE

Consumption year	Oct 2019 - Sep 2020	Oct 2020 - Sep 2021
Annual calculated (projected) cash income from HEA	325,372	276,239
Annual value of own produce / free foods	59,686	78,748
Total annual income (cash+food) 2020-21	**385,058**	**354,987**
Cost of non-food expenditure 2020-21 (NFE)	-68,665	-71,301
Total annual income minus NFE	**316,393**	**283,686**

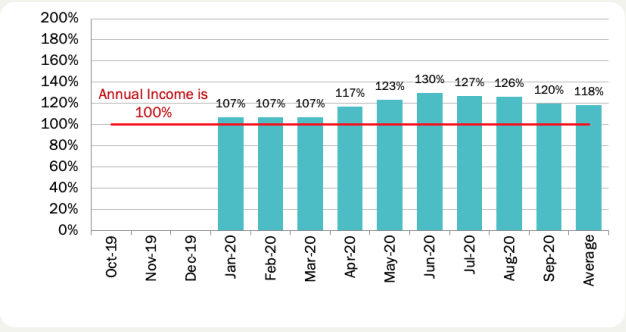
- The main changes to the March 2021 outcome analysis were self-employment income was lower (85% of the reference year cash income level, compared to 100% as estimated during the March 2021 OA), as were remittances (25% of the reference year cash income level – or a 75% reduction – compared to 80% of the reference year cash income level estimated in the March 2021 OA). The crop and livestock analyses conducted during the March 2021 OA have not been revised. Table 2 shows the annual income calculations.

Part 4: Affordability

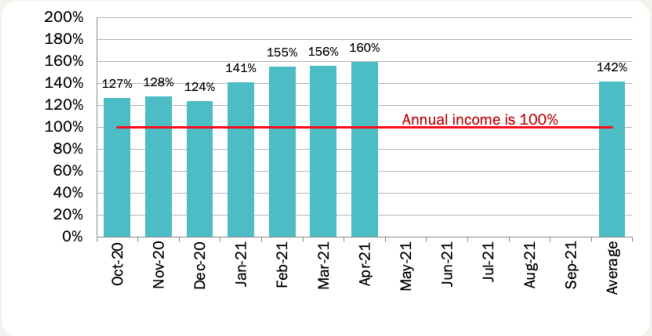
- The annual cost of the diet is unaffordable for the very poor households despite low food prices with the annual cost of the diet exceeding 100% the annual income plus value of own food minus non-food expenses (Figure 3). The diet becomes even more unaffordable in the 2020/21 consumption year with the cost of the diet over 150% of the annual income in February-April 2021.

FIGURE 3: ANNUAL COST OF THE DIET (BY MONTH) VERSUS HEA ANNUAL INCOME*

a) January 2020-September 2020



b) October 2020-April 2021



**Annual income = annual cash income + value of own production - non-food expenditure. The CotD monthly costs have been converted into annual amounts for this comparison.*

Part 5: Cost and affordability comparisons to previous years including pre-COVID-19

- The first COVID-19 case was confirmed in Niger on 20 March 2020.[12] As a result, Niger's land borders were closed, except for freight transportation and airports in Zinder.[13] These restrictions have continued until April 2021. In November 2020, cases began rising, peaking in January 2021, and falling again by March 2021.[14]
- The cost and affordability of the nutritious diet is compared between the two consumption years to explore the potential impacts of COVID-19. Market price data before COVID-19 restrictions is available for October 2019 from a Fill the Nutrient Gap analysis as well as retrospective price recall by market traders for January to February 2020 as part of this pilot.
- The daily household cost (figure 4) shows that the cost of the diet was higher in October 2019 than in 2020 in the same month. However, this was reversed for the months of January to April with a higher cost in 2021. This may be explained by the higher the cost of staples mentioned above.
- The diet is less affordable in the 2020/21 consumption year (figure 5). This may be due to a combined effect of a lower annual income as well as the increased cost of the diet. While the impact of COVID-19 pandemic on the cost and affordability of a nutritious diet cannot be distinguished from other factors such as rising insecurity, the increased cost has been linked to disruptions in production and importation of cereals from Nigeria as a result of insecurity and COVID-19 restrictions mentioned above.[15] While in October, affordability is comparable, by January 2021, the cost of the diet is above 140% of the annual income and continues rising until the end of the study period.

FIGURE 4: DAILY HOUSEHOLD COST (CFA) OF A NUTRITIOUS DIET IN 2019/20 COMPARED TO 2020/21

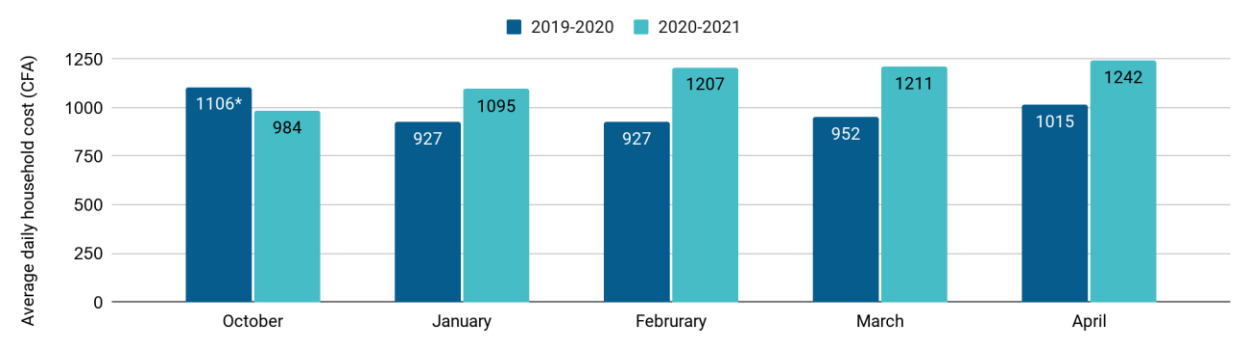


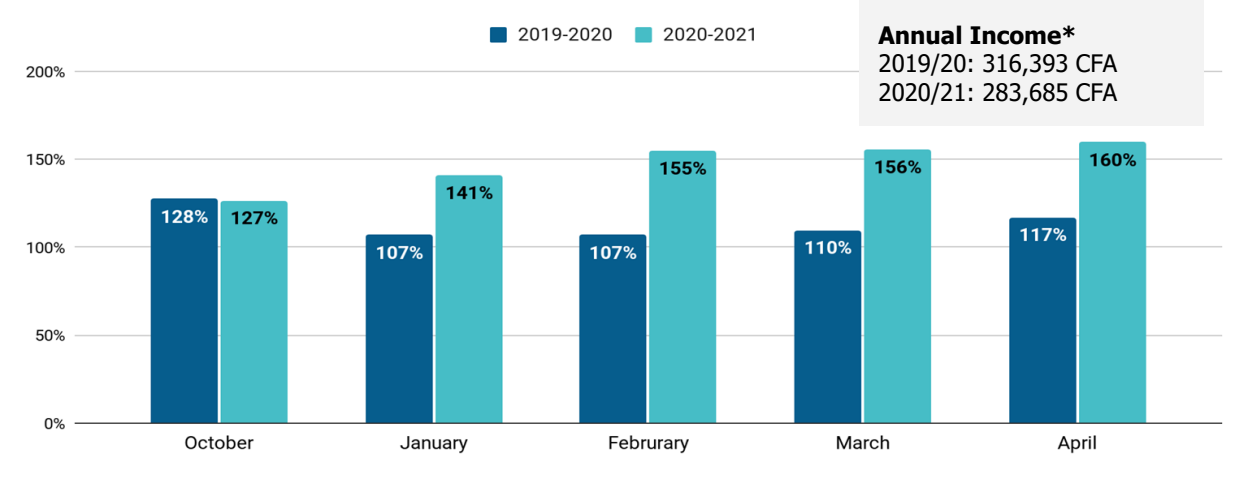
FIGURE 5: ANNUAL COST OF THE DIET VERSUS ANNUAL INCOME*

[12] https://www.aa.com.tr/en/africa/niger-reports-first-confirmed-covid-19-case/1772561

[13] https://www.garda.com/crisis24/news-alerts/324131/niger-authorities-close-borders-as-of-march-20-due-to-covid-19

[14] https://covid19.who.int/region/afro/country/ne

[15] Fews Net. 2021. West Africa Niger Food Security Outlook. An atypical price increase limiting household food access. February 2021. Fews Net. 2021. High commodity prices and insecurity continue to limit food access. March-May 2021



**October 2019 data is from the October 2019 Fill the Nutrient Gap analysis*

**Annual income = annual cash income + value of own production - non-food expenditure. The CotD monthly costs have been converted into annual amounts for this comparison.*

Part 6: Limiting Nutrients

TABLE 2: LIMITING NUTRIENTS IN THE LOWEST COST NUTRITIOUS DIET FOR A HOUSEHOLD OF SIX

	B12	Pantothenic acid	Calcium	Iron	Vitamin A
Household	■	■			
Child 12-23	■	■	■	■	
Chilid 8-13	■	■	■		
Man 30-59	■	■	■		■
Woman 30-59y (lactation 7-12months)	■	■		■	

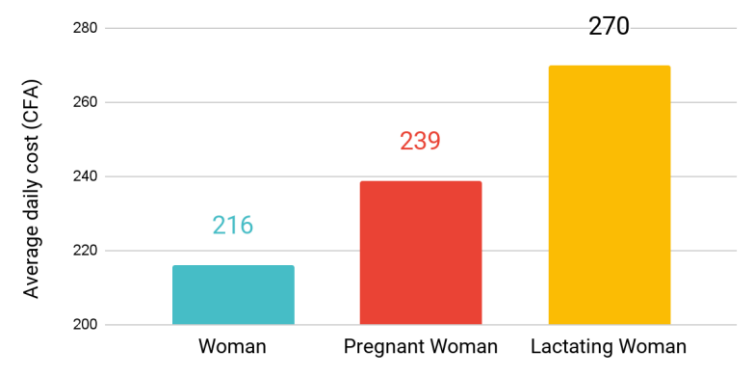
There are two nutrients (vitamin B12 and pantothenic acid) at the household level and three additional nutrients for specific individuals (calcium, iron, and vitamin a) that drive the cost of the diet. Table 2 shows these limiting nutrients for the household and specific individuals.

Part 7: Cost of the nutritious diet for women by breastfeeding and pregnancy status

- To meet the nutrient needs for a woman who is pregnant or breastfeeding costs 5% more than a woman who is neither pregnant nor breastfeeding. Compared to a pregnant woman, the cost is 13% higher to meet the nutrient needs for a breastfeeding woman. (Figure 6)

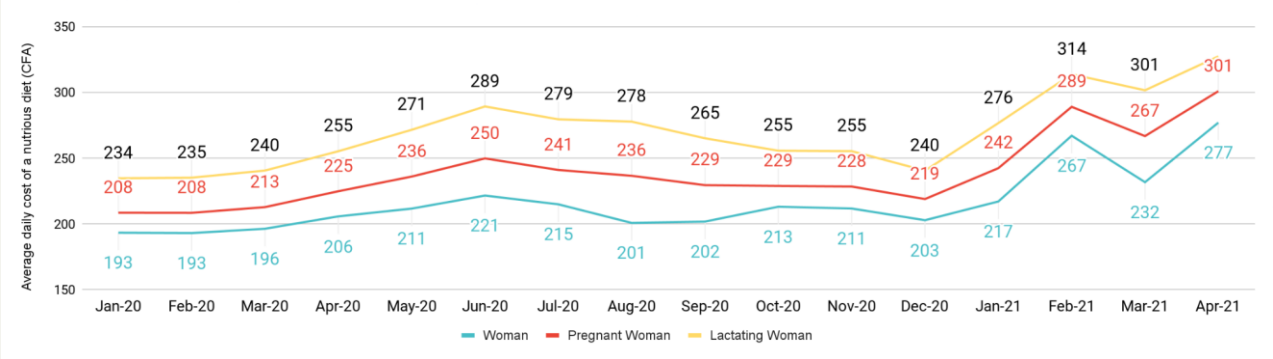
- Figure 7 shows how the daily costs of a nutritious diet for an adult woman, pregnant woman and breastfeeding woman vary across the months.

FIGURE 6: AVERAGE DAILY COST OF A NUTRITIOUS DIET (CFA) FOR WOMEN* BY PREGNANT AND LACTATION STATUS



**Women aged 30-59y, moderately active / lactation semester average / pregnancy semester average*

FIGURE 7: DAILY COST (CFA) OF A NUTRITIOUS DIET FOR AN ADULT WOMAN BY MONTH AND PREGNANT AND BREASTFEEDING PRACTICES



**Women aged 30-59y, moderately active / lactation semester average / pregnancy semester average*

KEY LEARNINGS AND CONCLUSIONS

Programme and Policy

1. **Key learning 1: The COVID-19 pandemic has increased the cost and reduced the affordability of a nutritious diet for a very poor family in the DTK Agropastoral Zone.** While specific impacts of COVID-19 restrictions cannot be distinguished from other factors, the pandemic has had a negative impact on the affordability of a nutritious diet. A decrease in affordability of nutritious diet may indicate worsening malnutrition.

2. **Key learning 2: Results can be used to inform shock responsive social protection and may be used as an early warning system for worsening malnutrition.** While the actual cost of a nutritious diet may be lower than what has been calculated by the CotD software, these monthly costs may provide guidance for cash and cash-based interventions as well as provide an early warning for increased malnutrition.

Technical and Methods

3. **Key learning 3: Monthly cost analysis is feasible on a shortened food list.** The monthly costs reveal seasonal variations as well as highlights monthly cost of the diet fluctuations, varying composition of the nutritious diets based on specific food cost increases/decreases. However, the total cost of the diet may not be the absolute cheapest available as it is based on a limited number of foods.

4. **Key learning 4: Monthly income level analysis is not feasible in a context where the majority of the income is concentrated in certain months.** While non-farming incomes are monitored monthly, a large amount of the income is obtained at the start of the consumption year which is harvest time in agriculture zones making it difficult to allocate income monthly. Monthly income level analysis may be feasible in an urban setting where household income sources may not change from month to month. Additionally, there was little change in off-farm income from month to month because the economic situation was not rapidly changing. Income monitoring may be more useful on a quarterly analysis instead.

5. **Key Learning 5: To enable regular monthly analysis, modifications to the CotD software to streamline analysis will need to be made.** The current software requires additional analyses and data visualisation to be conducted outside of the programme. The suggested modifications include increasing the maximum number of seasons to twelve and streamlining changes to constraints.