



Assessing Nutrition and Socio-economic  
Impact of COVID-19 on Rural and  
Urban Communities in Fiji

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A big vinaka vakalevu and thank you to all communities mentioned in this report. Thank you for sharing your stories with us. It is our hope that the findings shared in this report will inform policy, humanitarian response and provide support and opportunities to all households in Fiji and throughout the Pacific Islands in this tough time.

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## Key Messages

COVID-19 related border lockdowns, restricted movements and curfews are causing reduced household incomes, purchasing power and access to markets of rural and urban households in Fiji. Loss of income due to loss of jobs and reduced sales at markets have increased hardships faced by households. Purchasing power is low and families are reducing expenditure on food and non-food items. People in urban areas are moving back to rural communities. There is also an increased incidence of social issues such as land conflicts and thefts of high value crops and live-stock. Communities are selling more “unhealthy cheap products such as cigarettes, kava, noodles, snacks” to generate income for households.

Many people are moving to the villages and are contributing positively to increase the productivity of farms. As the lockdown eases, households are selling some produce but there is a worry that the purchasing power and income of many households is getting worse. Sales are likely to continue to decrease as many households produce the same products.

The cultural, religious and communal safety net is becoming stronger and helping communities cope through practices such as land sharing, na solesolevaki, barter systems, and provision of relief supply to the most vulnerable households. There is a need to mobilize resources and information and tools to support CSOs, NGOs and communities to scale up the communal safety net actions to support households.



There is increased involvement of households in home gardening and farming during COVID-19 as a positive response to increased support from government and development partners through distribution of seedlings and farming equipment. Households reported an increase in production of root crops, vegetables and fruits. However, production of pulses/legumes, grains, nuts and seeds are low, as is production of livestock. More people are relying on the sea for food than before COVID-19.

COVID-19 has shifted households' practices back to traditional food systems whereby households are consuming more foods from their own farms/gardens, sea, and forest and have reduced purchases from shops and markets.

Increased home gardening and farming as a response is effective but there is a strong need to diversify types of seedlings and planting materials distributed to farmers to include foods such as pulses, fruit trees, nuts. There is also a need to encourage integrated livestock-crop farming systems targeting diversification of diets at the household level. The 9x9 home garden is preferable. This should be accompanied by trainings on food storage and preservation, seed saving, cooking recipes, and environmental sustainability including soil management, agro-forestry, conservation agriculture and sustainable intensification.

Households are consuming less diversity (3-4 food groups per day) of foods during COVID-19 compared to before COVID-19 (4-5 food groups per day). This is surprising as we expected dietary diversity to in line with increased consumption of local foods. Now, local production is increasing and consumption of local foods is increasing but the diversity of food is decreasing.



About 17% of households have experienced severe food insecurity and this is worse in peri-urban communities. The proportion of households experiencing severe food insecurity is likely to increase if COVID-19 and associated lockdowns persist. Raising awareness on nutrition is important as part of the COVID-19 response, and could contribute to reducing non-communicable diseases in communities in Fiji. The Ministry of Health should review health messages and recommendations on healthy foods to consume to maintain a healthy life. Key advice that needs to be reviewed is the recommendation from health departments to consume less root crops and consume more wholegrain foods.

COVID-19 responses should attempt to understand and address the systemic impacts of COVID-19 on households including impacts on income, food systems, diets, education, health, water security and culture. Apart from food insecurity, other stresses include the additional burden of educating children, access to water, medicine for elderly people, children and women. Therefore, addressing systemic vulnerabilities of the household is important not only against COVID-19 but climatic hazards, social, gender and cultural issues.

International, regional, national and local organizations should work in a participatory manner with communities to understand the scale and intensity of impacts, develop solutions and mobilize resources to address the impacts and build more resilient and sustainable communities. The research managed to capture the real impacts of COVID-19 on sources of income, foods, dietary diversity, education, health and cultures in Fiji. There is a need for continuous monitoring at the household level to understand the status of income, food security, dietary diversity and livelihoods both in urban and rural areas in Fiji. There is also a need to understand the compound impacts of COVID-19, Tropical Cyclone Harold and other drivers of vulnerability in Pacific Islands' households, which may further delay achievement of the Sustainable Development Goals.

## Executive Summary

This report profiles the results of an assessment of the impact of COVID-19 on the socio-economic status, food systems and nutrition, and health and wellbeing of households in nine rural and peri-urban communities in Central and Western Divisions in Fiji for informing policy and programme responses. Both quantitative and qualitative methodologies were employed. 339 households were surveyed, and 30 focus group discussions were conducted between the period 20 to 31 July 2020.

The COVID-19 crisis has negatively impacted income and livelihood of Fijian households. Primary breadwinners have lost jobs or had the number of days or hours reduced. Farmers, fisher-folk and market vendors have reported declining sales. Purchasing power for food and non-food items has decreased. In response, many households have turned to farming and fishing to increase access to food and income while some mainly women have started informal businesses e.g. cutting grass or cleaning compounds and selling alcohol, cigarettes and home-made puddings and pies. Cultural practices such as *“Na solesolevaki”* (working together), sharing food and bartering have re-emerged and/or intensified and are effective coping mechanisms. Some families rely on withdrawals from the Fiji National Provident Fund and remittances.

About 80-90% of households have been sourcing food from backyard gardens and farms and purchase rice, flour, sugar, canned fish, and noodles to supplement their diets. The main foods produced in backyard gardens include root crops, plantains, vegetables and fruits and very few rear poultry or cattle for eggs, milk and meat. Some communities in the Western Division are exceptions to this norm, especially Drasa Civicivi settlement where cattle are raised. Many households have reported consuming fish and other seafood 1-3 days in a week and red meat 1 day a week.

The mean Dietary Diversity Score (DDS) during COVID-19 for the Western Division was found to be lower than the DDS reported by 2018 and 2019 studies. For the six-month period, February to July 2020, about 40%, 32% and 16% of all households experienced mild, moderate and severe food insecurity respectively. Participants' knowledge on food were consistent with health expert guidelines.

There were challenges with homeschooling. Over 75% of learners in Central and Western Divisions, had received no assistance from teachers/tutors although some well-educated neighbors and retired teachers provided support. Course material was generally not user-friendly, and some worksheets included unfamiliar content. Young children had to be closely supervised by mothers who had to divert time allocated for other chores to help. Challenges experienced by learners in tertiary institutions were due to high internet costs, poor connectivity and limited technical support. Those in primary and high school were easily bored and preferred to spend time engaging in street and other activities with peers. The government-subsidized bus fares provided relief for families when schools reopened.



Since the onset of the crisis, households continued to have access to medical services at various health institutions including pharmacies and there were no reported cases of illness. Households were mainly concerned with food shortages and price increases, lack of work and travel restrictions, but would not borrow money. In rare cases where domestic abuse was reported, this had existed prior to COVID-19. Relationships within families and communities were reported to have improved due to spending more time together.

Most households have continued to meet financial commitments for cultural, community and church events (e.g. funerals or the usual village soli). Some churches have cancelled all contributions while mataqali in some communities have covered expenses using pooled resources as needed. Civil Society Organizations and Faith-based organizations providing humanitarian and technical support to households and communities need additional funding to respond to the increased needs for assistance.



## 2.0 Introduction

Fiji has been affected by the COVID-19 crisis. The first confirmed COVID-19 case in Fiji was identified on 19 March, 2020. Fiji's border was closed and lockdown was imposed in Lautoka in the Western Division on 20 March 2020 and in Suva in the Central Division on 03 April 2020. Curfew hours were implemented and all schools were closed. Schools reopened in late August but the border closure and curfew remained in place.

One third of the Fijian workforce, approximately 115,000 Fijians, lost their jobs or reduced working hours due to COVID-19. The crisis led to the closure of 93% of Fiji's tourism industry from late March resulting in an increase in urban to rural migration (PIFON, 2020). The Fijian economy is projected to contract by 21.7% by the end of 2020 (Narayan, 2020). The Prime Minister has publicly stated that COVID-19 is without doubt, the job killer of the century (Krishant, 2020). The Government of Fiji has responded in different ways. For example, the Ministry of Agriculture has provided seedlings to communities to help them produce foods for household consumption. Those that have been laid off from work have withdrawn a portion of their social security savings from the Fiji National Provident Fund. In addition, NGOs such as the Foundation for Rural Integrated Enterprises and Development (FRIEND) and women's and church groups in the Central and Western Divisions have played a crucial role in ensuring that communities are well taken care of; through a range of social programs including distribution of seedlings and trainings.

Following the onset of the COVID-19 pandemic in Fiji, the Technical Centre for Agricultural and Rural Cooperation (CTA) and the International Fund for Agriculture Development (IFAD) agreed to conduct an assessment of the effects of COVID-19 on the nutritional adequacy of diets and livelihoods in two Pacific Island Countries (PICs): Fiji and Solomon Islands. The University of the South Pacific (USP) was commissioned to undertake the assessment within the framework of the CTA-IFAD co-funded Innov4AgPacific four-year project. This assessment builds on the partnerships and lessons learned from studies carried out in selected urban and rural communities in 2018 (Haynes et al., 2020) and 2019 under the Community Food and Health (CFaH) and Innov4AgPacific projects in Fiji and the Solomon Islands (Iese et al., 2020). The results will be used to inform a UN Joint Socio-Economic Impact Assessment report and an inter-agency response to the pandemic. This report focuses on the assessment, findings and recommendations for Fiji.

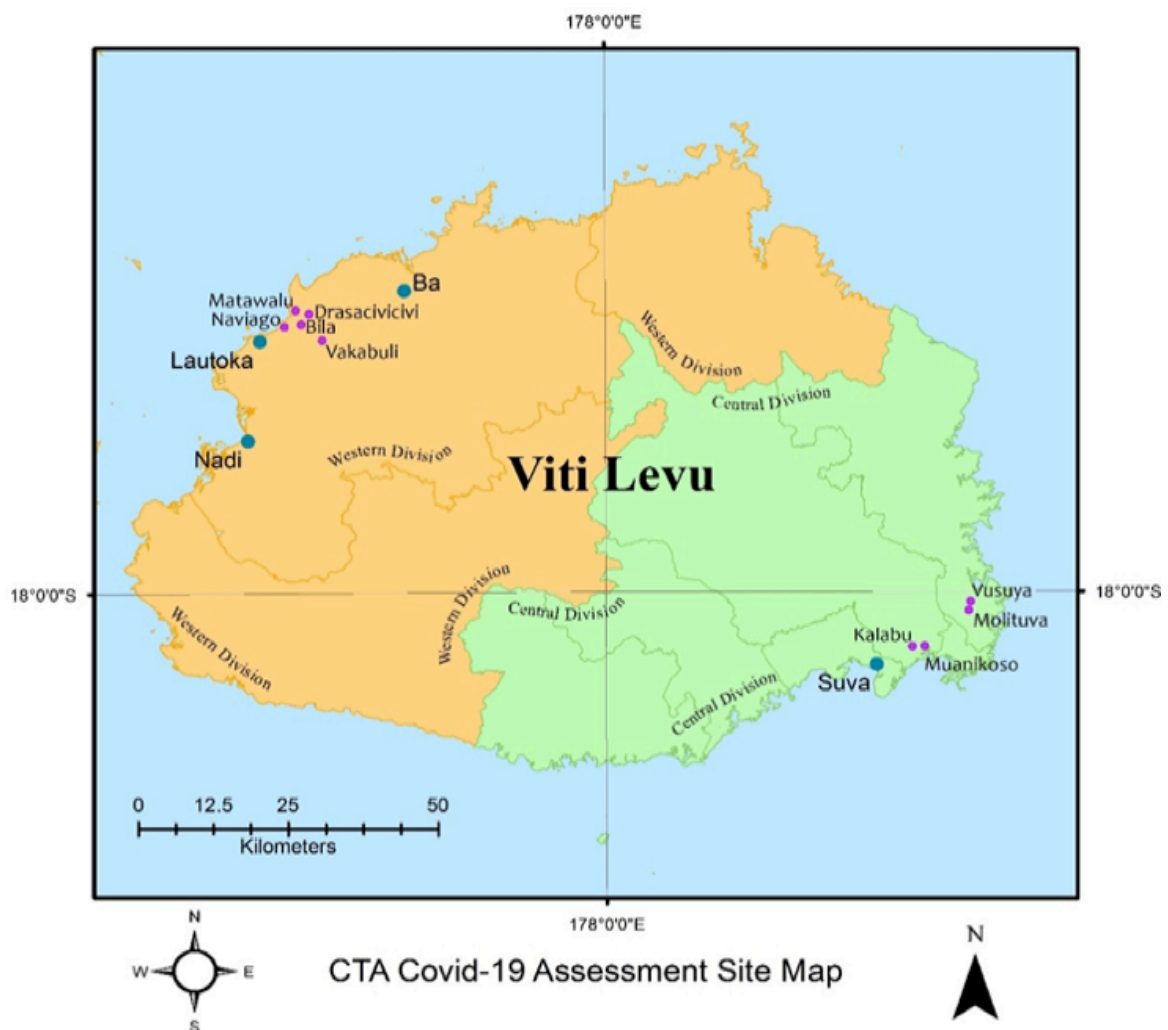


Figure 1: Fiji Survey Sites (map drawn ArcGIS, with the readily available data (Shapefiles) provided in the USP GIS-Data Drive)

### 3.0 Study Sites

The assessment was conducted in nine communities located on Viti Levu. Communities were selected because they were the sites of pre-COVID-19 dietary diversity assessments in 2018 (communities selected in the Western Division) and 2019 (communities selected in the Western Division). The five communities in the Western Division included two informal and three formal communities located in Lautoka. Some of the households in the five studied communities (see Figure 1) in the Western Division have received support from FRIEND, a local NGO that works in partnership with communities to develop the capacity of small-holder farmers and community networks to improve household food production, nutritional diets, health and livelihoods. FRIEND promotes a 9x9 backyard garden model and has partnered with the Innov4AgPacific project to implement the model in some households in the studied Western Division communities. The four studied communities in the Central Division included two rural and two peri-urban communities. The communities in the Central Division were not recipients of the support from FRIEND but they were involved in the CFaH Project in 2018 (Haynes et al., 2020).

### 3.1 Communities in the Western Division



Figure 2: Overview of selected communities in the Western Division (Source: Google Earth <https://earth.google.com/web/>)

#### Matawalu village

The formal village of Matawalu is located along the Kings Highway on the outskirts of Lautoka City. It has 70 households with a population of more than 800 people. Some of the villagers are dockworkers, farmers, fishermen and some are also involved in other casual employment. This low-lying village is located on the banks of the Matawalu River (see Figure 2). The river is both a source of food and also a critical hazard for households. During heavy rainfall, the river burst its banks and caused severe flooding, which damaged houses and home gardens.



### **Naviyago village**

The formal village of Naviyago is also located on the outskirts of Lautoka City, off the Kings Highway. The village has about 50 households with a population of more than 300 people. It is located on a low-lying area situated close to the Naviyago River, which separates the village from Vitogo village (see Figure 2). The village is also prone to flooding and has been struck by cyclones in the past. Some of the villagers are dockworkers, farmers or fishermen and also involved in other casual employment.

### **Vakabuli village**

The formal village of Vakabuli is located on the outskirts of Lautoka City, off the Kings Highway. The village has about 90 households with a population around 400 people (see Figure 2). The village is located next to the Fiji Pine Plantation. The Plantation is operated by the Tropik Woods Industry and it is also where most of the men in the village are employed. The villagers rely on crops and livestock production for food and also to sell at markets.

### **Bila settlement**

The Bila settlement is also located on the outskirts of Lautoka City and accessible through a feeder road off the Kings Highway. The village has around 21 households with a population of around 200 people. The settlement is a farming community. They plant sugar cane, root crops, vegetable gardens and fruit trees. They also fish as a source of income and food. The local NGO FRIEND had also donated a fishing boat to assist them with fishing activities. The women have home gardens around their houses. The community has been severely affected by floods as the houses and farm lands are located very close to the river (see Figure 2).

### **Drasa Civicivi settlement**

Drasa Civicivi is a settlement around sugar cane farms off the Kings Highway in Lautoka. This community is comprised predominantly of Fijians of Indian descent. It is a cane-farming community of about 20 households with a population count of around 100 people. The women of the settlement are involved in income generating activities such as sewing, bee keeping and gardening. FRIEND organization has been supporting the women in Civicivi with bee keeping and home gardening training.

### 3.2 Communities in the Central Division

The rural formal and informal communities are located closer to Nausori Airport in Tailevu Province. The formal and informal peri-urban communities are located close to Suva city. A short description and maps of the communities are given below.



Figure 3: Overview of selected communities in the Central Division (source: Google Earth <https://earth.google.com/web/>)

#### Kalabu Village

Kalabu is a formal village in the peri-urban zone close to Suva city. The villagers owned a total land area of 2,849.80 hectares which are leased to commercial farmers. Native reserves are given for informal settlements. There are 55 households in Kalabu and people are mainly engaged in farming and other forms of casual employment (see Figure 3). The community receives regular payments for lease of lands.



### **Muanikoso Settlement**

Muanikoso is a peri-urban settlement located on a native reserve owned by Kalabu village (see Figure 3). The settlement was initially settled by the descendants of Melanesians brought to Fiji during the blackbirding era. It is now populated by people from all over Fiji. Most of the residents have just enough land to build a house with scarce space for backyard gardening. Muanikoso settlement has 72 households and people are mainly engaged in fishing, farming and other casual forms of employment as a source of livelihood.

### **Molituva Village**

Molituva is a rural formal village located in the Tailevu Province (see Figure 3). It is located about five minutes north of Nausori Airport, and seven minutes from Nausori town. There are six mataqali (iTaukei landowning unit) and about 47 households within the registered boundary of the village. Most of the other mataqali members have preferred to move out of the village and settle on their mataqali land. In doing so, they have engaged themselves in commercial or semi commercial farming. They plant root crops, vegetables and also have tilapia - fish farms.

The farmers are assisted through various ministries including the Ministry of Agriculture, Ministry of Fisheries, Ministry of Social Welfare and the Ministry of Tourism. They are also supported by the Itaukei Land Trust Board (TLTB) and other Non-Government Organizations (NGOs). Most of their products are sold at the Nausori market, the government owned Agro Marketing Board, Food Processors Limited and private enterprises such as New World Supermarket and Rajendra's Supermarket etc.

### **Vusuya Settlement**

The Vusuya settlement is located on south eastern Viti Levu. There are more than 100 households in the settlement and the rest of the households are comprised of farmers (Itaukei and Indo Fijians), most of whom are leasing land belonging to Molituva and Naduru villages. The main economic activity is vegetable farming which is sold to Food Processors Limited, Agro Marketing Board, New World Supermarket, Rajendras supermarket and the Municipal market in Nausori town.

## 4.0 Methodology

The Community Food and Health (CFaH) tools (Haynes et al., 2020; Guell et al., 2020) developed by the CFaH Project<sup>1</sup>, which were applied to assess Innov4AgPacific community seed funding projects in 2019 (Iese et al., 2020), was updated to include methods to assess the impacts of COVID-19 on socio-economic and income, livelihood (health, education, water) and nutrition and food systems. The tools were pilot tested and research team members were trained to conduct the quantitative and qualitative research methods, use the tablet survey platform (Kobo toolbox) and apply ethical research behaviors.

A team of researchers from the Pacific Centre for Environment and Sustainable Development (PaCE-SD), USP, collaborated with the field team from FRIEND, Fiji's National Food and Nutrition Centre and the Provincial Administration, Naitasiri to carry out the assessments during the period 20 to 31 July, 2020.

### 4.1 Survey – Quantitative Assessment

The CFaH Quantitative tool included a questionnaire comprising a food security and nutrition component and a non-food component. The food security and nutrition component included;

- (i) 24-hour recall to calculate dietary diversity score (DDS)
- (ii) a diet screener;
- (iii) food insecurity experience scale (FIES) (FAO);
- (iv) food sources and
- (v) nutritional knowledge questionnaires.



Figure 4: Research team interviewing a participant, from Naviyago village.

<sup>1</sup> <https://gtr.ukri.org/projects?ref=MR%2FP025250%2F1>



The FAO/FANTA dietary diversity tool was used to calculate DDS<sup>2</sup>, defined as the number of standard food groups consumed in the last 24 hours (out of a possible 10 groups):

1. grains, roots and tubers, and plantains;
2. pulses (beans, peas and lentils);
3. nuts and seeds;
4. dairy;
5. meat, poultry, fish;
6. eggs;
7. dark green leafy vegetables;
8. other vitamin A-rich fruits and vegetables;
9. other vegetables;
10. other fruits.

Applying the same guidelines, minimum dietary diversity score for women of reproductive age (M-DDW) was calculated for women aged 15 to 49 years, and a score of 5 or more indicated minimum dietary diversity as a proxy to micronutrient adequacy in this population subgroup. The non-food components included questions to determine:

- (i) socio-economic status,
- (ii) education,
- (iii) health and well-being and
- (iv) water security.

The multi-component survey questionnaire was pre-installed on the tablets using Kobo Collect version 1.25.1, prior to being used for data collection in the field. A total of 339 households from the nine communities were randomly selected and contacted through FRIEND for Western communities in the Western Division and village headmen for communities in the Central Division (see Table 1). In each target community, data was entered into the online Kobo Toolbox and information was checked and verified, to ensure that all the forms were filled correctly. All data were imported and cleaned in Excel 2016 xlm format. The food security and nutritional indicators; DDS, FIES diet screener, food sources, nutritional knowledge and non-food components were analyzed using R version 4.0.2. A total of 339 households were interviewed, a coverage of 63% of total households in the studied communities (see Table 1).

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<sup>2</sup> <http://www.fao.org/3/a-i5486e.pdf>



Table 1: Number of households surveyed per community

Study Community	Total number of households	Total number of households surveyed	% coverage
Kalabu	55	33	60
Muanikoso	72	45	62.5
Molituva	47	33	70.2
Vusuya	110	70	63.6
Vakabuli	90	47	52.2
Mattawa	70	54	77.1
Naviyago	50	29	58
Drasacivicivi	20	11	55
Bila	21	17	81
<b>Total</b>	<b>535</b>	<b>339</b>	<b>63.3%</b>

## 4.2 Focus Group Discussions - Qualitative Assessment

The CFaH Focus Group guide was updated to include seven sections:

- (i) food habits and preferences;
- (ii) food sources and food economy;
- (iii) interventions on the ground;
- (iv) food systems mapping and food sources before and during COVID-19;
- (v) socio-economic impacts;
- (vi) education impacts;
- (vii) water security and socio-cultural impacts.

The participants from each community were selected either by the village-head-man (Turaganikoro) or whoever was present and willing to participate from informal settlements. The FGDs were conducted by two facilitators (USP researchers). The focus groups comprised four groups of mostly five members, inclusive of gender and age per community (see Table 2). The roles of the facilitators were to (i) do the questioning (preferably fluent in either iTaukei or Hindi), (ii) ensure that signed consents forms were completed at the beginning of the FGDs, (iii) transcribe notes and operate the audio recorder during the survey, and (iv) assist in household food system mapping activities. A total of 30 FGDs comprising 5-6 persons; male, female and youth per group in all in the nine studied communities in Fiji (see Table 2).



Table 2: Composition of 30 focus groups (FGD) conducted in Fiji

Community	Adult Male	Adult Female	Youth Male	Youth Female
Kalabu	5	5	5	5
Muanikoso	3	9	5	6
Molituva	5	5	4	7
Vusuya	3	3	4	3
Vakabuli	8	5	5	5
Matawalu	4	13	5	5
Naviyago	5	8	5	-
Civicivi		-	3	-
Bila	5	-		3
<b>Total</b>	<b>38</b>	<b>51</b>	<b>33</b>	<b>34</b>

## 5.0 Results

This section describes the status and the impacts of COVID-19 on socio-economic factors and income, food and diets, health, water and education of households in studied communities in Fiji.

### 5.1 Impacts of COVID-19 on the Socio-economic Status

The crisis has severely impacted people's sources of income and livelihood.

#### 5.1.1 Sources of Income

COVID-19 is affecting remittances and the key sectors of agriculture, services and tourism. Working hours and days have been reduced for the breadwinners of studied households. Some have been laid off from work without prior warning or notice of when they would be able to resume work. These changes have led to a reduction in their household incomes. Figure 5 shows that in eight out of nine communities 40% or more of households reported that COVID-19 has disrupted work/household income; about 40% or more in three communities had lost jobs; more than 20% in eight out of nine reported reductions in revenues and more than 20% in five out of nine reported partial pay. Some iTaukei families have had to leave the urban areas and relocate to the villages due to financial constraints. On return to their village, they have started cultivating family plots / available lands to feed their families.

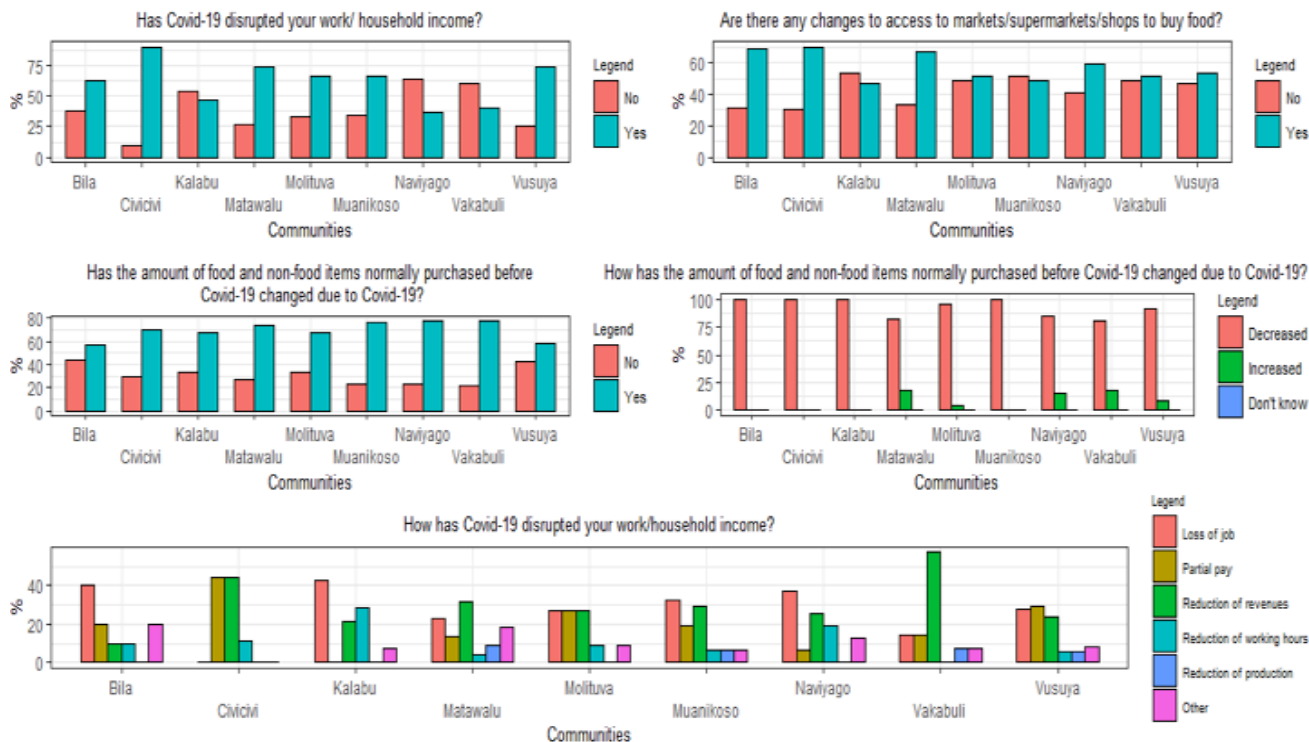


Figure 5: Socio-economic impacts of COVID-19

In addition, many families are facing financial hardships to manage their households as the utility bills and other family expenses need to be paid.

*“It was a bit tough because we have to pay the utility bills and also manage the family expenses from the reduced pay and the reduced hours” (FG\_FJ01)*

Their “purchasing power” has been reduced as some have not been able to buy “food items” and “non- food items” such as clothes and fashion accessories that they were able to buy before COVID-19. Some households had to prioritize spending only for food and important necessities to maintain their livelihoods.

*“There has been a change as well in the shopping content from the supermarket bearing in mind the rise in food prices” (FG\_FJ04)*

The fishermen are also affected. Some have mentioned that income generated from the sale of their catches has been reduced significantly since COVID-19 as many people have stopped buying fish from them. Market vendors have also experienced a reduction in the sale of their produce and some of them have lost their allocated tables in the market place.

*“Yes, the quantity of food sold has decreased as not a lot of people are buying compared to before” (FG\_FJ06)*



### 5.1.2 Coping Mechanisms

Many households in the studied communities have resorted to farming and fishing as a coping mechanism.

*“So many families are now farming as a means for survival and with that if we have issues at home where we run short of processed foods, we would always opt for our farm for root crops and vegetables” (FG\_FJ01)*

Figure 6 shows that the main source of income for the households in five out of nine communities after COVID-19 was farming/livestock. Salary and regular income are the main sources of income for four out of nine communities. About 70% of households from Civicivi informal settlement rely on salary and regular income. About 10-20% of households started their own business. For example, some women have started selling kava and cigarettes in the village and others selling homemade pudding and pies. These transactions are helping their families survive financially during COVID-19.

In addition, some community members have decided to provide services such as cutting grass and cleaning compounds for cash. Some families are budgeting finances as a coping mechanism and have decided to modify eating habits in order to save money. For instance, those who ate chicken throughout the week have resorted to a low-meat menu. They are consuming dhal (peas) vegetables and eggs. If they are having rice and dhal curry in the morning, then for lunch they will have tea with bread. For dinner they will have cassava as part of the meal they are cooking.

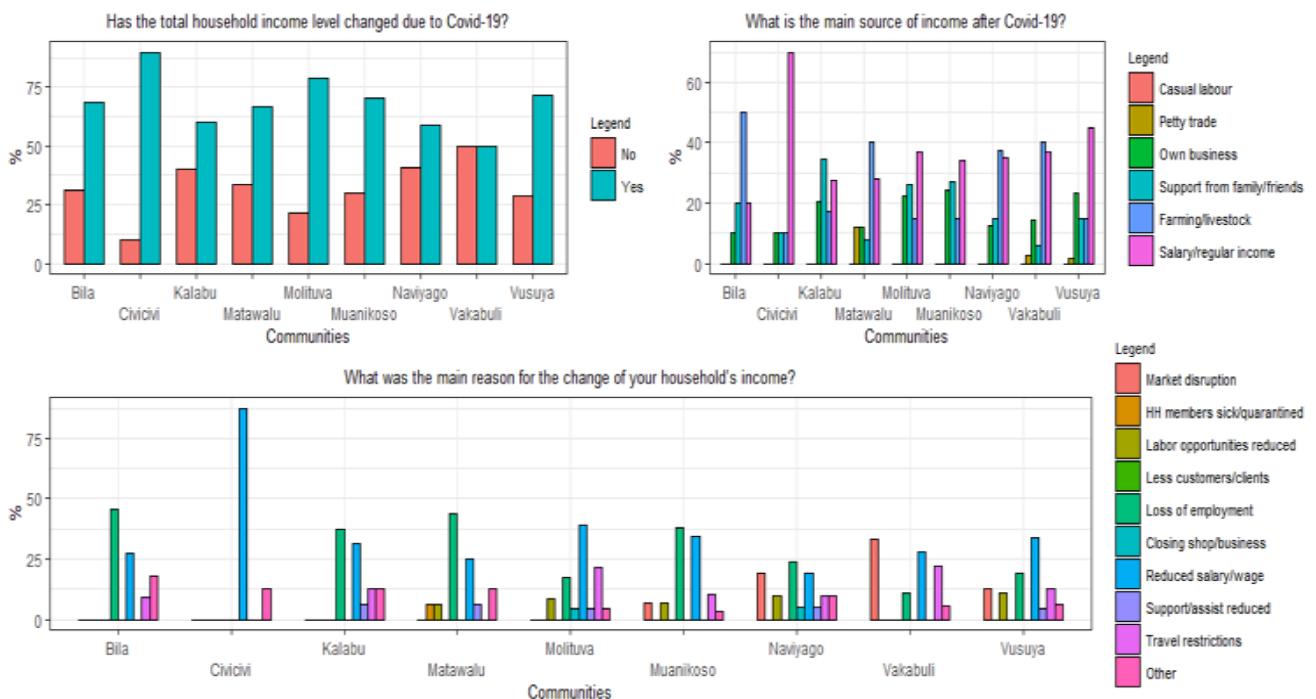


Figure 6. Changes of sources of income during COVID-19

*“Budgeting has really helped. Making sure we only buy what we need and also things that we can afford, keeping in mind we have kids that go to school” (FG\_FJ16)*

Moreover, some have resorted to sharing food despite how small the portion may be. Similarly, members of a mataqali in Vusuya settlement (iTaukei Land Owning Unit) have emphasized visiting fellow unemployed mataqali members and assisting them with food items. *“Na solesolevaki”* or working together has emerged strongly and has been widely observed in the midst of COVID-19 as a coping mechanism. The crisis has strengthened this practice and for some communities *“Na solesolevaki”* has been reintroduced since the crisis and strengthened for others who had maintained the practice.

*“No matter how small of a portion of food we get, we’ll share it amongst ourselves at home” (FG\_FJ08)*

*“In the village the spirit of working together has come out again strong, more solesolevaki where families look out for each other by farming together and supporting each other with the available resources from the farms. Fathers spend more hours as well in the farms now and are extending their farmlands as well” (FG\_FJ04)*

Moreover, during the lockdown period some families did bulk buying in order to maintain their food supply at home. Some families are currently living off their savings. Some people are engaged in the barter system as a coping mechanism.

*“Yes, we do. We barter cassava for fish or cassava with other seafood” (FG\_FJ17)*

## 5.2 Impacts of COVID-19 on Food and Nutrition

### 5.2.1 Food Systems and Sources

The food sources diagram (see Figure 7) shows an increase in food being sourced from backyard gardens and farms during COVID-19 in studied communities. The diagram also shows that there is an increase in the consumption of aquatic resources such as fish, shellfish, seaweeds from the nearby rivers and the ocean. People still rely on supermarkets to buy basic food items such as rice, flour, sugar, canned fish and noodles although households mentioned a decline in quantity and quality of purchases.

<sup>3</sup> In this report food systems refers to the household scale including traditional and subsistence foods from gardens, sea/rivers/streams and forest/jungle and purchased foods (but not production processing, transportation and storage of purchased foods).

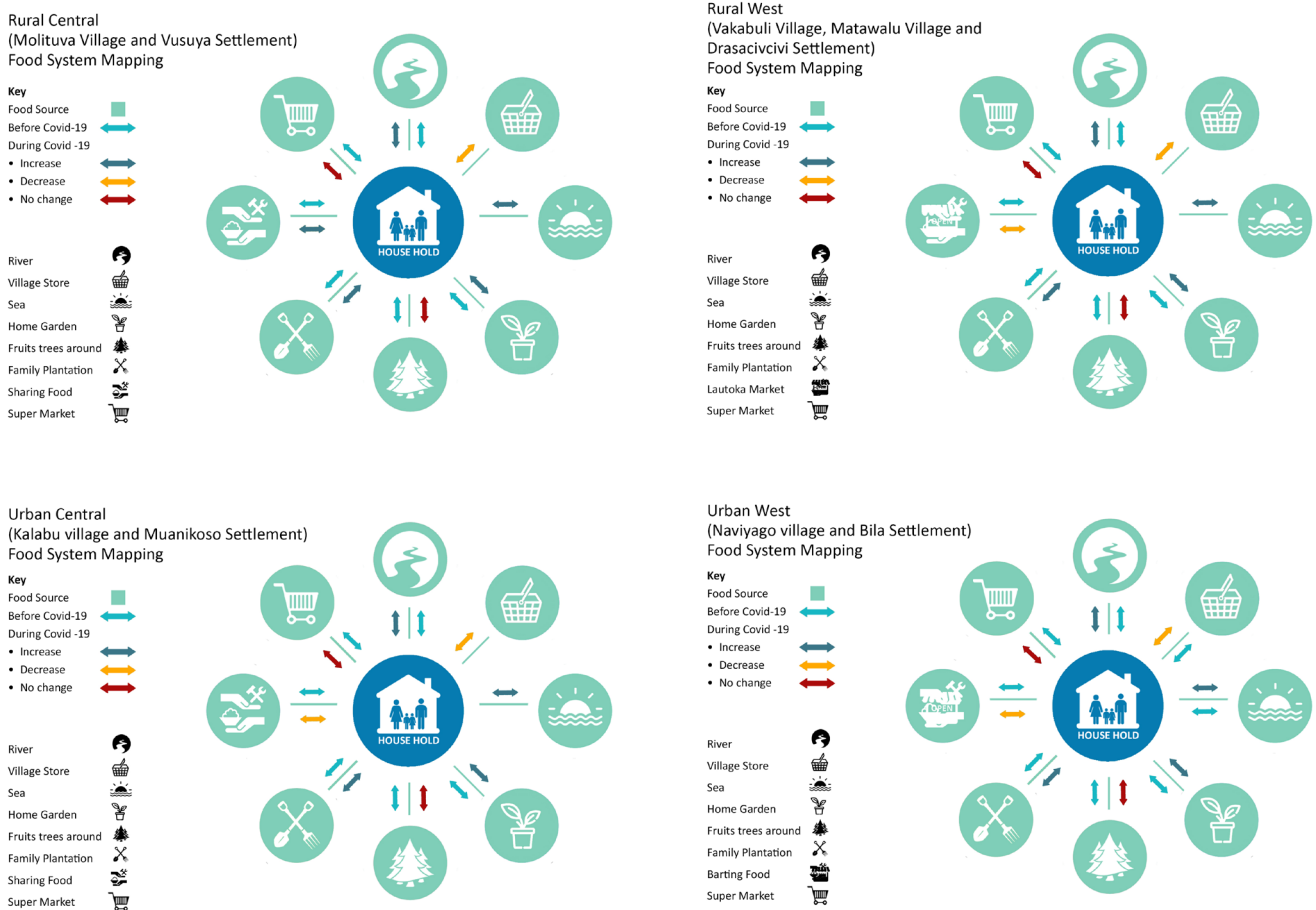


Figure 7: Food system diagrams for Fiji households.

From FGDs, it is evident that some people have started engaging in the barter system. They either exchange non-food items for pies and pastries or root crops for meat, noodles and processed foods. Some urban communities rely on markets as a source of food, especially those that are limited to a small backyard or compound that is not sufficient for farming.

The majority of respondents in each of the communities either produce their own food or purchase their food/drinks to supplement diets (see Figure 8). About 80% of households from all communities in the Western Division rely on food from gardens, hunting and fishing. Less than 75% of households from Central Division communities get their foods from local production. About 25-30% of households from Bila, Matawalu and Vakabuli borrow, barter or share foods with families and friends. A relatively small proportion of households (<10%) from Muanikoso, Kalabu and Naviyago exchange food for labor or received food aid during COVID-19. About 80-90% of households from the studied communities also purchase foods to supplement diets.

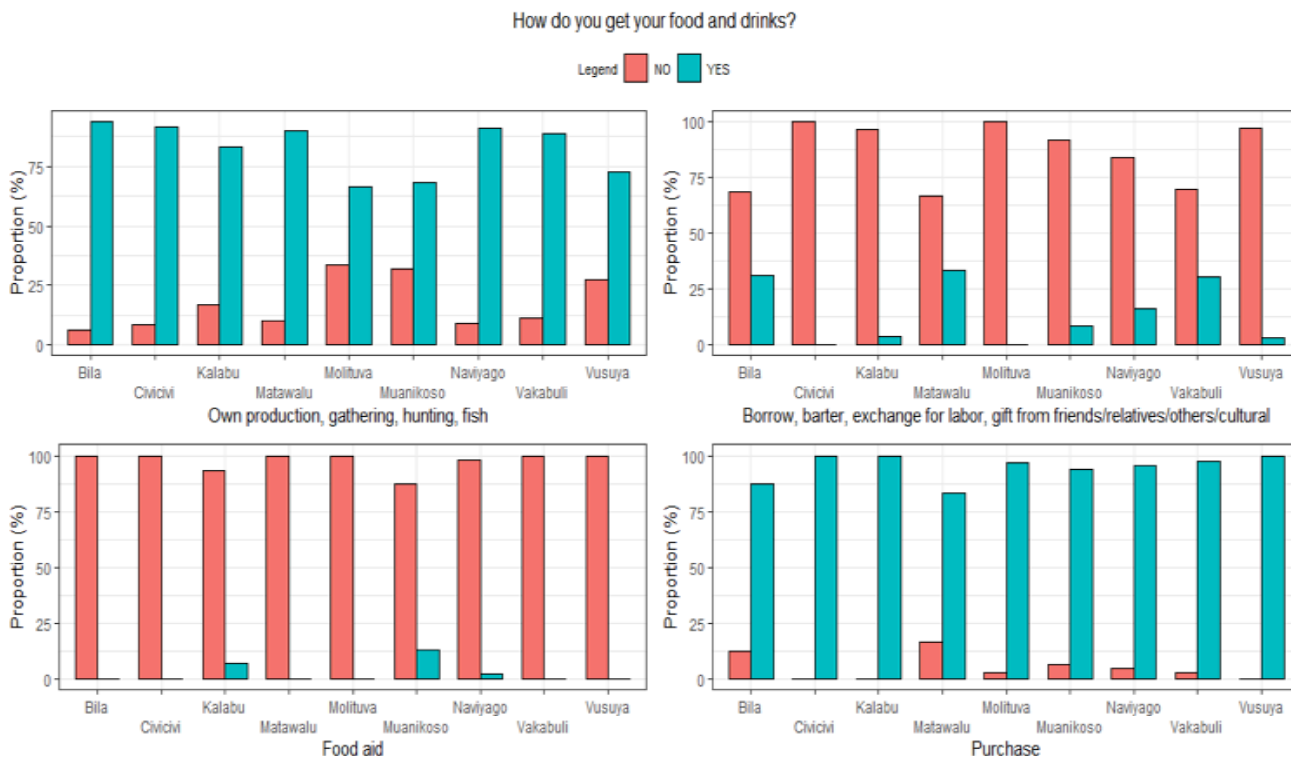


Figure 8: Proportion of respondents who have indicated their sources of food and drinks.

The main foods produced by households in different communities are shown in Figure 10. These foods include roots, tubers and plantains, some cereals/grain-based foods and eggs. Vegetables and root crops were the most commonly produced foods; about 80-90% of households produce vegetables from their home gardens. Apart from Civicivi, all households in studied communities produced 75-100% of root crops, tubers and plantains. Civicivi households are all Fijians of Indian descent whose primary source of carbohydrates is rice and flour (for roti). Muanikoso households produced less root crops than other communities because all households do not have access to lands for root crop farming. Some households from Muanikoso are leasing lands from Kalabu land owners to plant root crops. About 30-50% of households produced fruits either from gardens or forest. Very few households produced pulses, grain based foods, nuts and seeds (see Figure 10).

For protein sources, Matawalu, Bila, Naviyago and Vakabuli households (25-30%) engaged in fishing activities (see Figure 9). Very few households have poultry that produces eggs and cattle that provide milk and meat (only communities from the Western Division, especially Drasa Civicivi settlement).

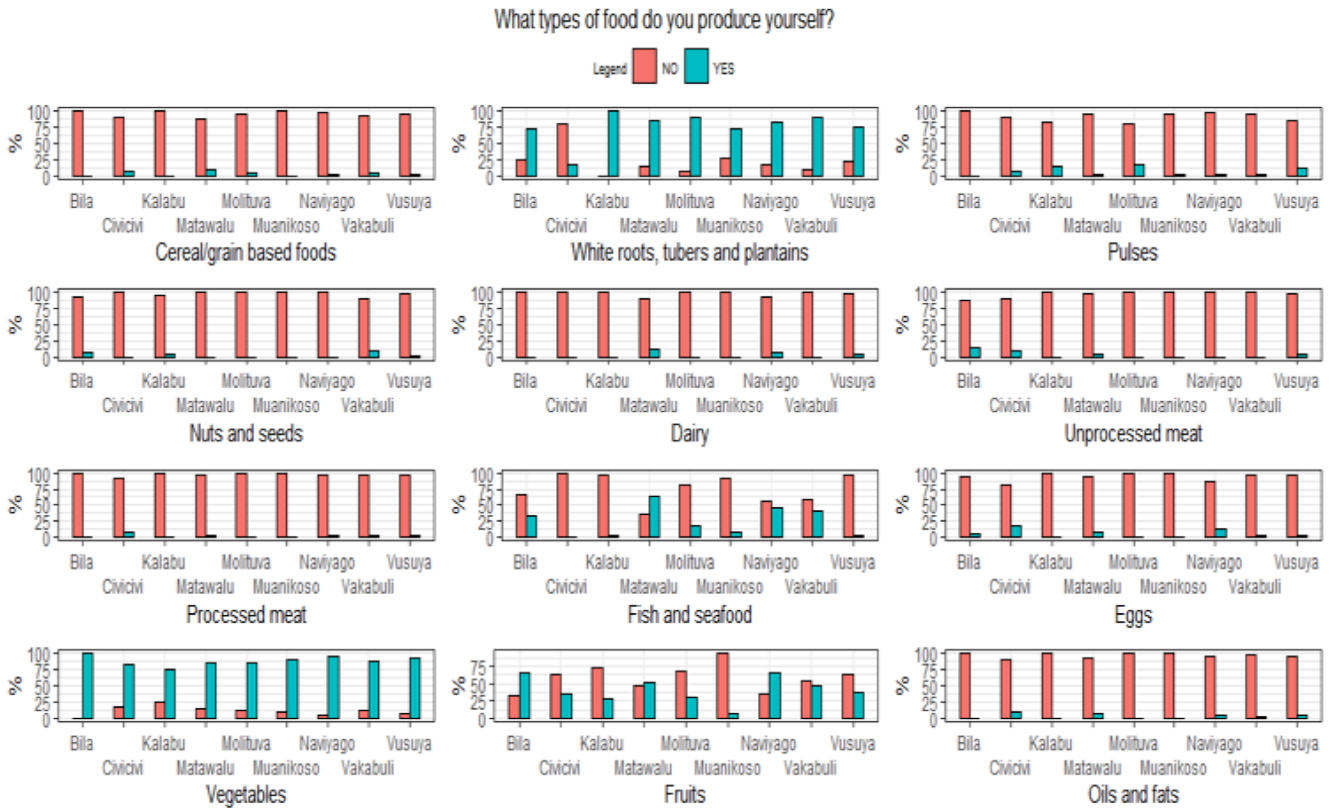


Figure 9: Proportion of respondents in the communities who have produced food themselves

### 5.2.2 Dietary Diversity Score (DDS)

During COVID-19, the mean DDS analysis showed that households consumed food from three to four different food groups out of a possible 10 food groups (see Figure 10). DDS-W is defined as the dietary diversity score (DDS) for women of reproductive age (15-49 years) for whom, Meeting the minimum DDS of five or more indicates micronutrient adequacy. The DDS during COVID-19 (Iese et al., 2020) is lower when compared to the DDS in 2019 for all communities in the Western Division and in 2018 for all communities in the Central Division (Haynes et al., 2020).



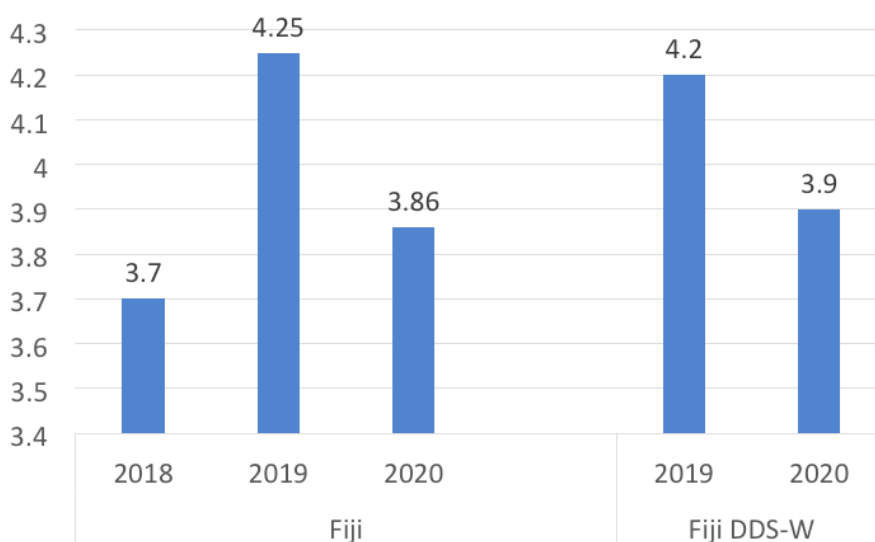


Figure 10: Comparison of the mean DDS for 2020 (COVID-19 during the time of study versus 2019 and 2018 (Ilese et al., 2020). Note: The mean DDS in 2018 was from households in the same communities in Central Division only (Haynes et al., 2020); The mean DDS in 2019 was from households in the same communities in the Western Division (Ilese et al., 2020).

A total of 31% of households achieved the minimum dietary diversity (MDD) in contrast to the 69% who did not (see Figure 11). The MDD score was generated only for those participants with no missing data across all 10 food groups. A minimum of five food groups should be consumed to achieve the MDD according to the guide to measurement (FAO and FHI 360, 2016).

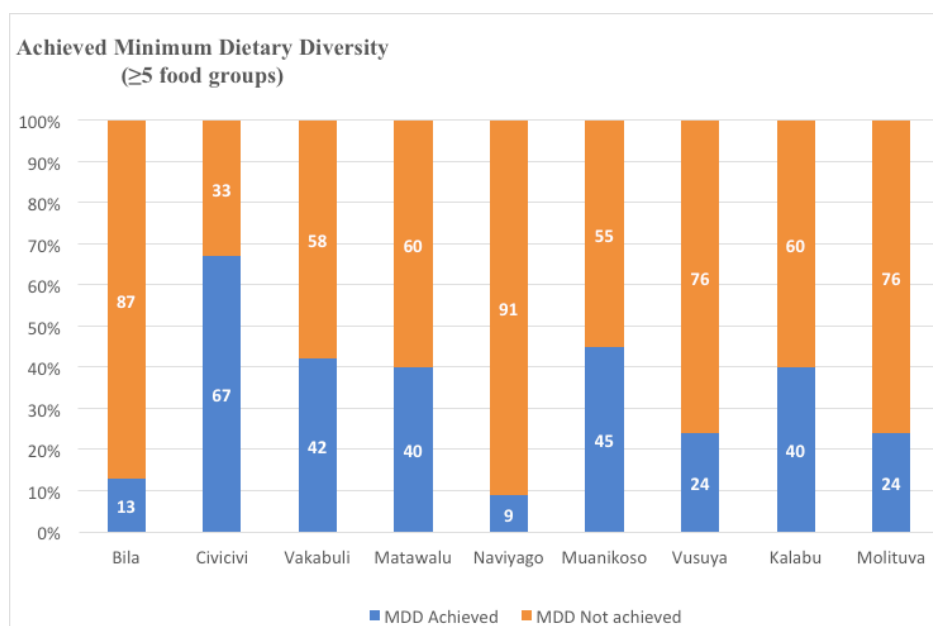


Figure 11: Minimum dietary diversity of communities



To put the findings into perspective, before COVID-19, O'Meara et al. (2019) reported that about 97% of rural households in their study sites in Fiji grew white roots or tubers, 60% grew vegetables, and 65% grew leafy vegetables. They also mentioned that households had a low farm diversity index of  $7.9 \pm 5.2$  and livestock biodiversity index mean of  $0.9 \pm 1.2$  (54%).

Our results show that most households in studied communities in Fiji are producing three different food groups namely 1) white root crops, tubers and plantains 2) vegetables and 3) fruits. Some of the communities in Fiji are catching fish for the household. There is very little production of pulses, cereals/grains, processed and unprocessed red meat, eggs and dairy productions. The household local production system in Fiji reflects the initiatives from governments and development partners to address COVID-19, which focuses on increasing home gardens and crop production. COVID-19 and national responses have increased households' production of root crops, vegetables and fruits at urban and rural areas. However, the lack of diversity of farms to include pulses and livestock products remains an issue.

Households are reducing the purchasing of food because of the double impacts of loss of employment and loss of markets. Consequently, there are many households in studied communities predominantly consuming root crops, vegetables and fruits. This is reflected in the low diet diversity scores and the low percentage of studied households achieving minimum diet diversity (MDD). The mean DDS for Fiji is 3.86 which is low compared to 4.27 in 2019 (Iese et al., 2020) but close to 3.7 in 2018 (Haynes et al., 2020). The Central Division communities in the 2020 study were the core group for the 2018 study while the Western Division communities were studied in 2019 (Guell et al., 2020; Haynes, E et al., 2020; Iese et al., 2020). Moreover, O'Meara et al. (2019) reported that the commonly consumed food groups in their communities in Fiji include refined grains, white root tubers, flavourings/other drinks, oils/fats and dark green leafy vegetables. Few households consumed orange fleshed fruits (23%), vegetables (35%), eggs (25%) and dairy products (32%). O'Meara et al. (2019) found that 85% of their sample households had a low or medium household diversity score (HDDS); the mean HDDS was  $7.8 \pm 1.5$  (between 0-12 food groups). Their study concluded that the studied households had higher DDSs because their diet was supplemented regardless of income by their ability to grow food and source seafood from the sea and rivers. Our results cannot be compared correctly with the above results because of differences in communities studied and also methods; however, the information in studies before shows a high consumption of carbohydrates and sweet drinks with low consumption of fruits, vegetables, eggs and dairy products. Our results show that consumption of root crops and carbohydrates is still very high, while eggs and dairy consumption have been reduced. Consumption of vegetables and fruits have increased in COVID-19 times.



### 5.2.3 Diet Screener

A series of additional diet-related questions were included in a diet screener. These questions aimed to capture the frequency of consumption and quality of particular foods and beverages for which there is prior evidence of association with non-communicable diseases (NCDs), to complement the general diet diversity data.

As shown in Figure 12, all studied households consumed fruits 2-4 days a week. This is more than the national data which shows 65.5% of males and 66.4% of females aged 15-64 years consumed less than one serving of fruit per day (WHO, 2002). About 40% households in all communities consumed vegetables seven days a week, while the rest of households consumed vegetables 4-6 days in a week. This is an increase compared to the WHO STEPS Survey (2002), which found 26.3% of males and 26.5% of females consume less than one serving of vegetables per day and Camacho et al., (2019) who found less than 20% of households consume fruits or vegetables daily. Most of the households from Western Division communities consumed fruits 3-7 days in a week.

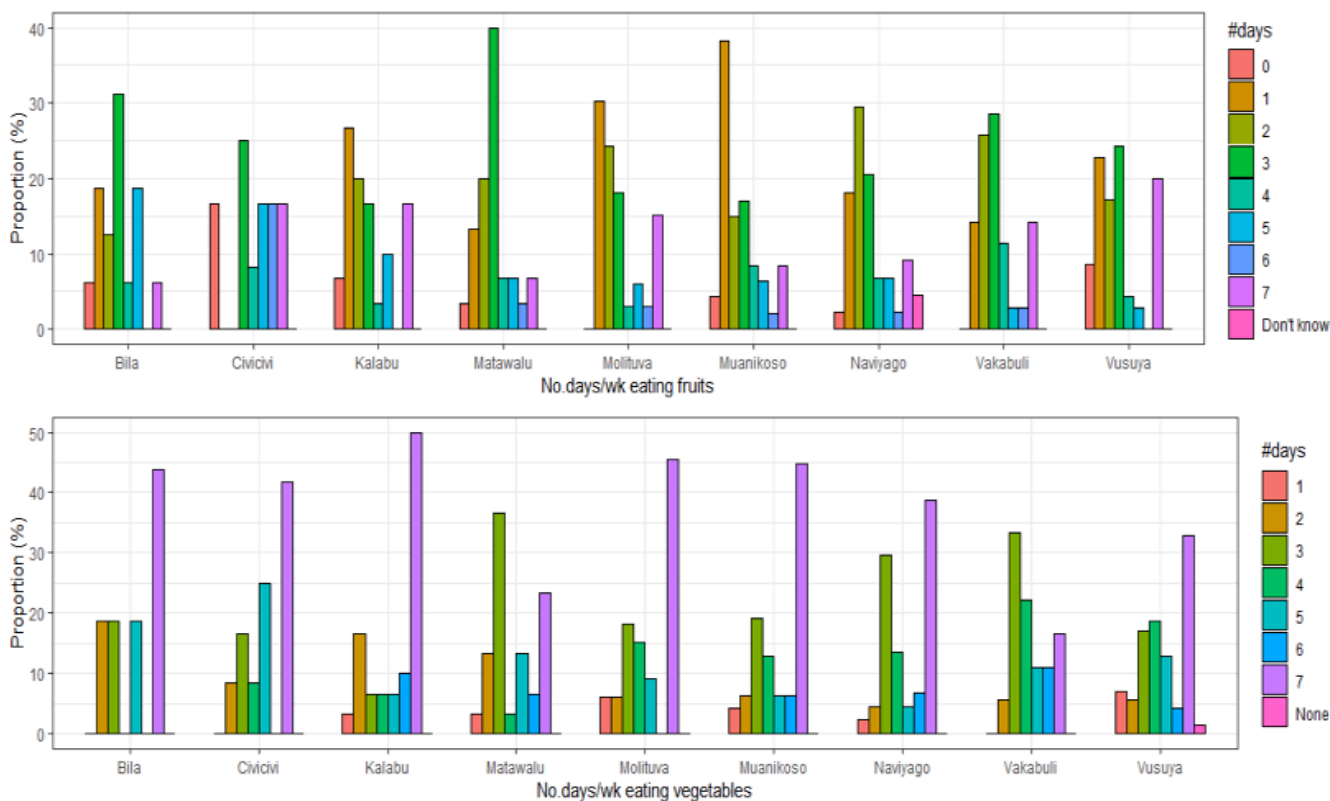


Figure 12: Proportion of respondents in Fijian communities and the number of days/week they consumed fruits and vegetables.



About 40% of households in all communities consumed canned fish 2-4 days in a week (see Figure 13). Many households consumed fish and seafood 1-3 days in a week and unprocessed and processed red meat one day a week. Less than 40% of households consumed unprocessed or processed red meat once a week. About 50% of households did not consume unprocessed or processed red meat in a week. Fijians of Indian decent in Civicivi settlement are Hindu and will not eat red meat.

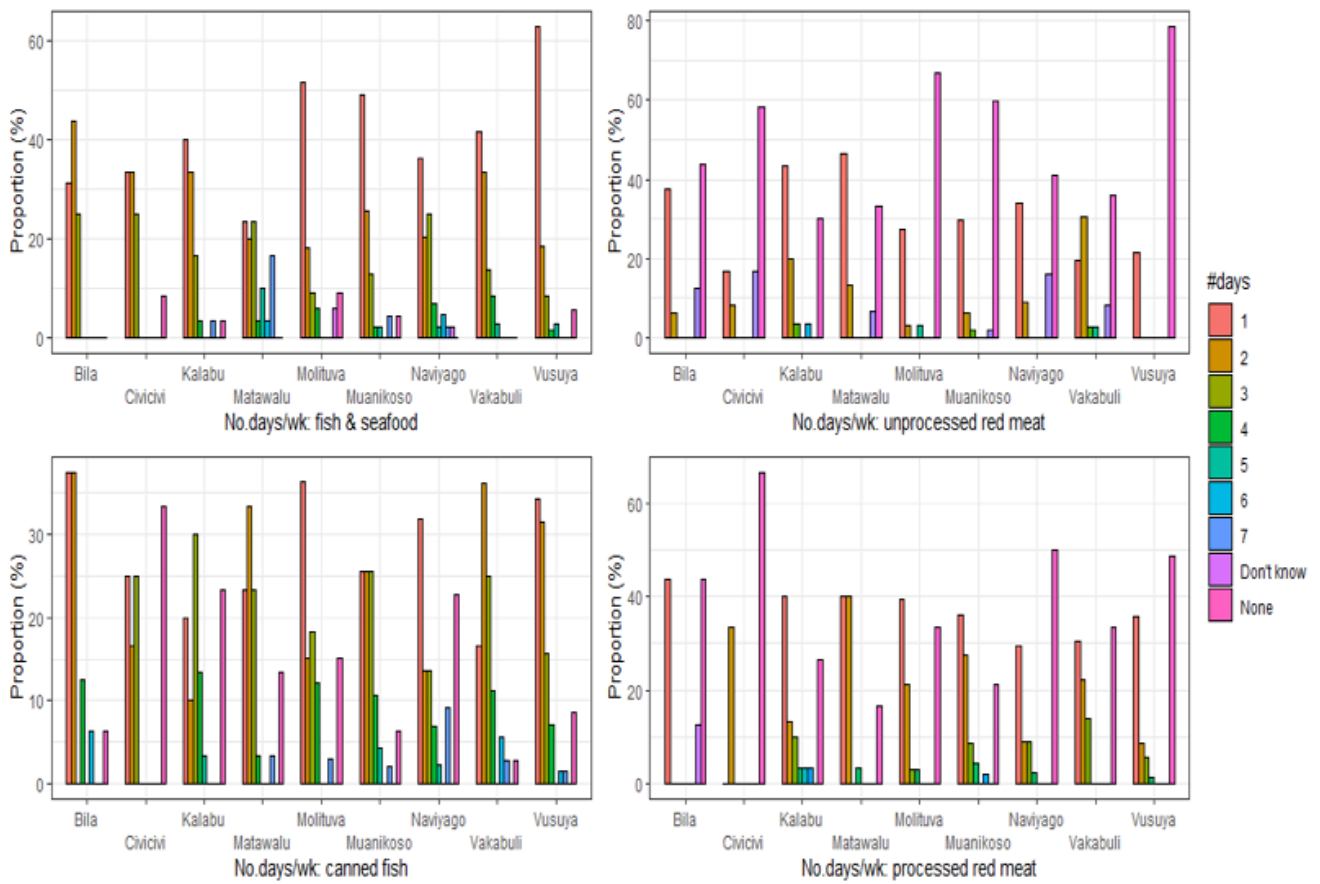


Figure 13: Proportion of respondents in Fijian communities and the number of days/week they ate fish and meat.

### 5.2.4 Food Insecurity

This component of the survey focused on capturing the level of food insecurity amongst the sampled populations using a self-reported, experiential measure of food insecurity that can be recorded at the individual level. The eight questions were mainly focused on access to healthy and nutritious food, consumed in the last six months. The food insecurity experience survey model estimates the level of food insecurity experienced by the percentage of households that answered “yes” to each of the eight questions. For example, Table 3 shows that households that answered “Yes” to Question 1 are categorized by the FIES statistical model as “food security to mild food insecurity”. Households that answered “Yes” to Question 2 are categorized as “moderate food insecurity (lower level)”. Households with “moderate food insecurity (upper level)” answered “Yes” to Questions 3, 4, 5, 7. Households categorized as “severe food insecurity” answered “Yes” to Questions 6 and 8. Overall, about 40% of all households experienced mild food insecurity (uncertainty regarding ability to obtain food); 32% experienced moderate food insecurity (compromising of food quality and variety) in the last six months. On the extreme scale, 10-16% of households experienced severe food insecurity (no food a day or more). This contradicts the earlier results that showed, all households have access to root crops, vegetables and fruits they are producing, supplemented by foods purchased from the shops.

*Table 3: The frequency (proportion) of households across the Fijian respondents, who responded ‘yes’ to the 8-Questions corresponding to the FIES severity scale. The statistical model categorized the “yes” answers to different levels of food insecurity.*

Variables	FAO’s Food Insecurity Experience Scale (FIES)							
	<b>FIES</b>	Uncertainty regarding ability to obtain food	Compromising on food quality and variety	Reducing food quantity, skipping meals				No food for a day or more
<b>Severity level</b>	Food security to mild food insecurity	Moderate food insecurity (lower level)	Moderate food insecurity (upper level)				Severe food insecurity	
<b>8-Questions</b>	Q1 (yes)	Q2 (yes)	Q3 (yes)	Q4 (yes)	Q5 (yes)	Q7 (yes)	Q6 (yes)	Q8 (yes)
<b>Fiji whole</b>	40%	32%	36%	24%	31%	15%	16%	10%



### 5.2.5 Knowledge About Nutrition

The questions on knowledge about nutrition covered the following areas: (a) food recommendations; (b) healthy diet; and (c) nutrition related to disease and health. The first set of questions were to find out how the participants had interpreted health messages on certain food groups commonly used in Fiji.

Participants knowledge on food recommendations were consistent with health expert guidelines, to consume/drink more water, fruits and vegetables. However, there were interestingly mixed responses on ‘root-crops’ and ‘whole grain’ foods, in which a significant number of respondents thought that root-crops should be taken in a lesser amount (Figure 14). This is consistent with the results of the pre-COVID-19 survey where 36% of the respondents thought that health experts recommend the consumption of “less root-crops”. Hence, suggesting a need for authorities concerned to present not only through nutrition education, but more research based up-to-date information (Iese et al., 2020).

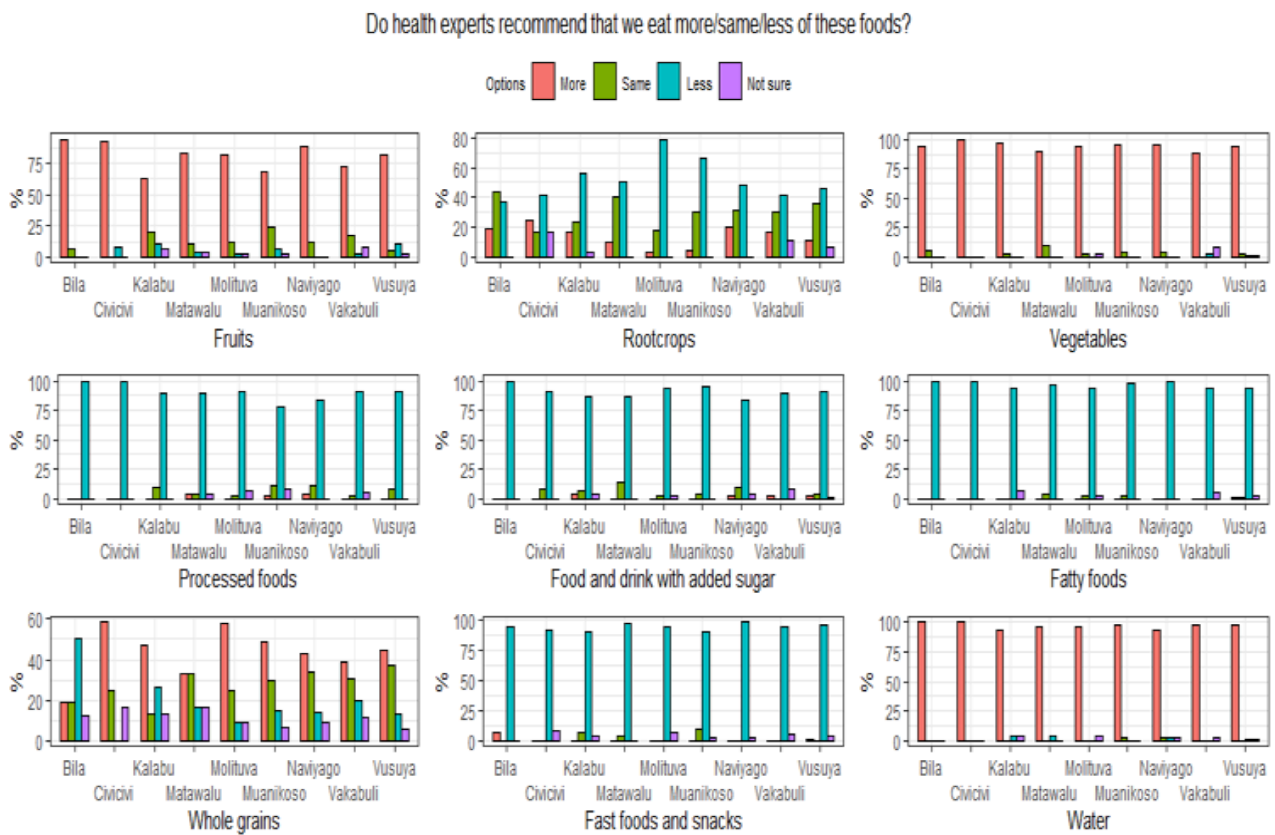


Figure 14: Proportion of respondents with their corresponding responses to the amount of food/drink items according to how they conceive the nutrition messages.



On fruits, although the majority of the respondents knew, the need to eat more fruits, very few knew the recommended amount of five servings per day as seen in Figure 15.

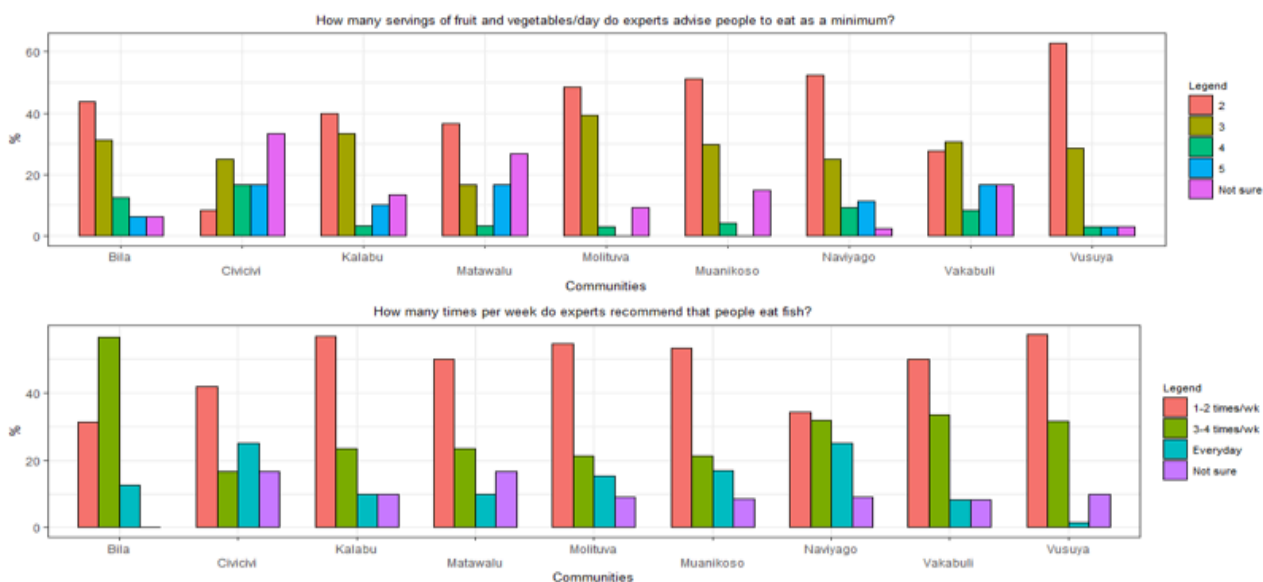


Figure 15: Proportion of responses on the number of recommended servings of fruits in a day & number of times in a week, one should eat fish.

For the salt content of foods (see Figure 16), the majority of respondents had correctly identified corned beef, tinned fish and noodle soup as ‘high in added salt’, most were unsure of the salt content of red meat and bread; a large number of respondents incorrectly identified frozen vegetables as ‘high in added salt’.

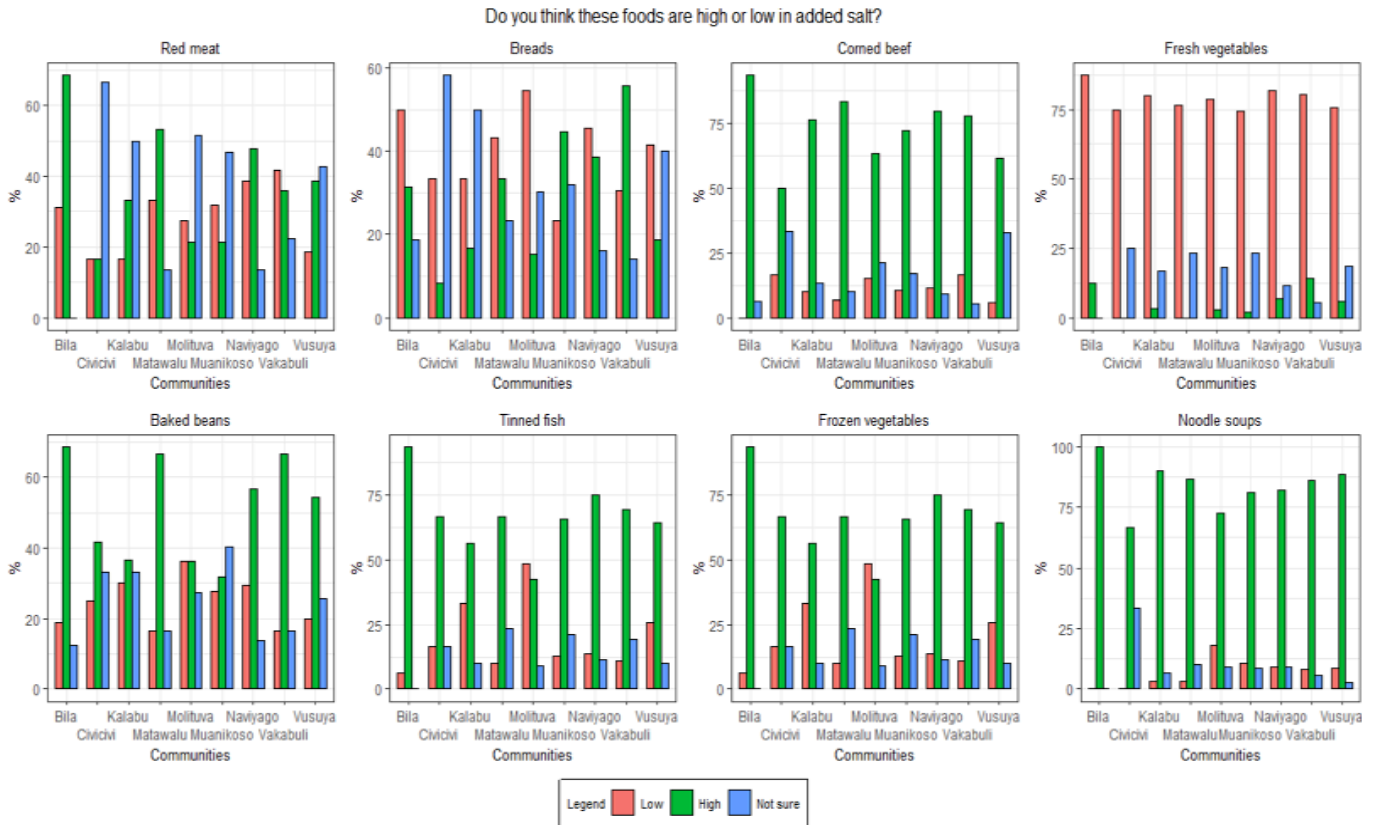


Figure 16: Proportion of responses on their knowledge to salt contents of certain foods.

Spronk et al. (2014) identified that low nutrition knowledge is often associated with poor health outcomes, hence with the results presented above, the need for nutrition and health literacy should be highlighted as one of the key recommendations.

### 5.3 Impacts of COVID-19 on Health

The proactive measures such as travel restrictions, border restrictions, contact tracing and practicing simple and safe hygiene measures that were put into place by the Fiji government, have greatly assisted in the containment of the virus. Approximately US\$7.4 million was approved by the World Bank (2020) to be used to strengthen the health systems and the well-being of the people of Fiji during the COVID-19 pandemic. Since the enforcement of the lockdown/curfew hours, most of the community members indicated that their families did not fall ill during this time.





However, if they needed medical care at the health center, hospital, clinic and other health services such as pharmacies they were able to access them. For their wellbeing, household members shared concerns of shortage of food, increase in food prices, lack of work and travel restrictions, but would not borrow money. In addition, the majority of the participants stated that they never experienced abuse during COVID-19 and for those who reported that they were rarely abused, this had occurred before COVID-19. It was also noted, through the household member interview that COVID-19 brought positive changes such as strengthening of relationships within families through spending time together and also fostering unity of working together and social relations within their communities.

### 5.4 Water security

Most communities indicated that water was readily available and water security was not a problem although on occasion water disruptions were experienced. The main source of water for households was tap water, which was supplied by the Water Authority of Fiji (WAF) (see Figure 17). The clean water was used for drinking, cooking, washing/laundry, sanitation and occasionally construction for their homes. The surveyed settlements and villages for both the Central and Western Division, all indicated that accessing good quality water was not a problem during the COVID-19 period. Part of the supporting mechanism provided by the government was to allow Fiji citizens who genuinely cannot pay, to defer payments and mandate no disconnections of water until 31 March 2021. On the other hand, Vakabuli village have their own water supply, sourced from dams which were separated from the government source, therefore access to clean water during the COVID-19 was not an issue.

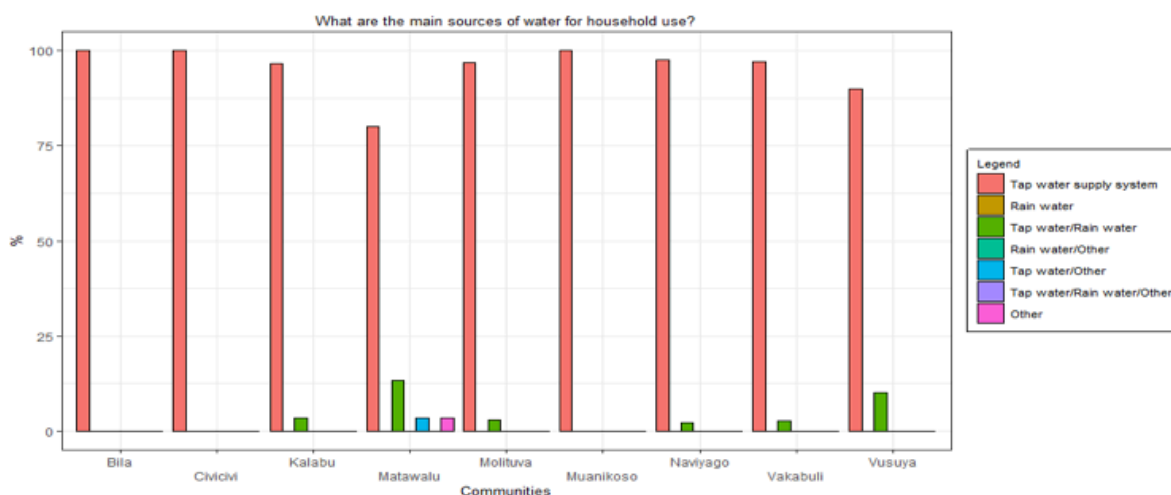


Figure 17: Main sources of water



### 5.5 Impacts on Education

In light of COVID-19 in Fiji, the government ordered nationwide school closures as an emergency measure to prevent the spread of the infection. With government support, schools were able to prepare home school packages and, for the first time, all formal learning was done remotely via online platforms and workbook arrangements.

Research into the perceptions of local communities on the impacts of COVID-19 on the education of their children as well as those individuals engaged in tertiary and vocation training yielded an array of responses. Homeschooling had major negative impacts on learners. School students lost interest in studying and spent time with their peers engaging in activities that were detrimental to their learning. Learners were bored staying home and often took to the streets. Most of the time, parents did not know where their children were and the younger children required additional supervision at home. Parents with younger children found homeschooling difficult as they had to divert time allocated for household chores to taking care of the children. Seventy-five percent of parents in the Central Division were also not aware of support services available for children and learners with special needs (see Figure 18).

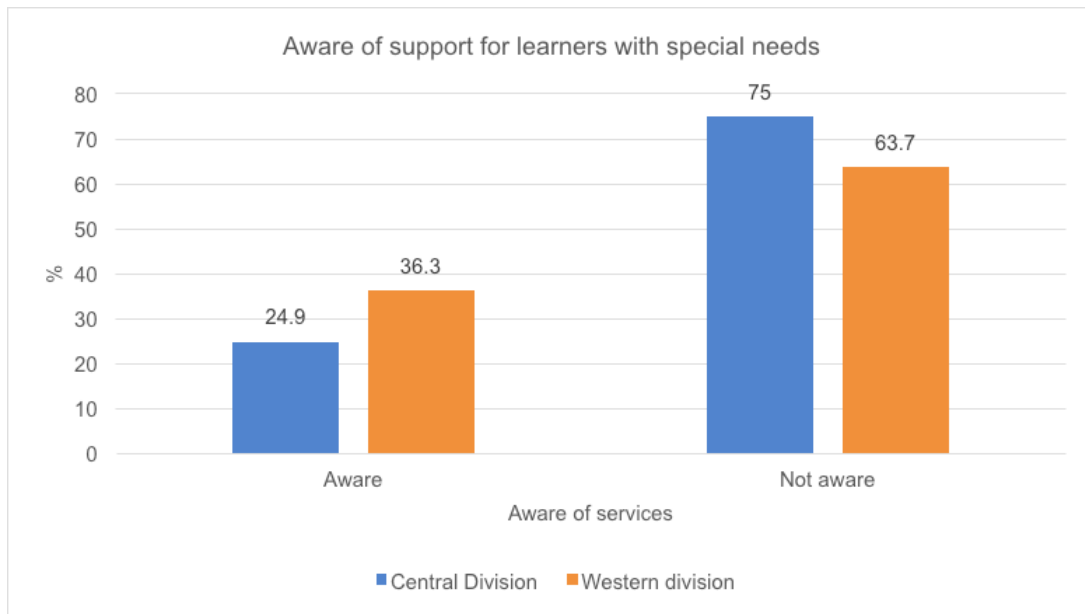


Figure 18: Awareness of support for learners with special needs

Parents found homeschooling packages bulky and not user friendly. Tasks had also been allocated for material that was yet to be covered. Parents also found the curriculum very different to what they were used to, making it even harder for them to assist their children.

Parents felt that more user-friendly worksheets should have been provided by learning institutions to better support their children's learning at home. Seventy-seven percent of learners in the Central Division and 83% of learners in the Western Division did not get any teacher/tutor assistance during the COVID-19 lockdown (see Figure 19) . Learners in tertiary institutions found online learning very challenging due to internet costs, connectivity and general online support. Learners in primary and high school found worksheets challenging as they tested material that had not been covered in class. The education channel on TV was hard to understand and children found it boring so they became disengaged after a few minutes.

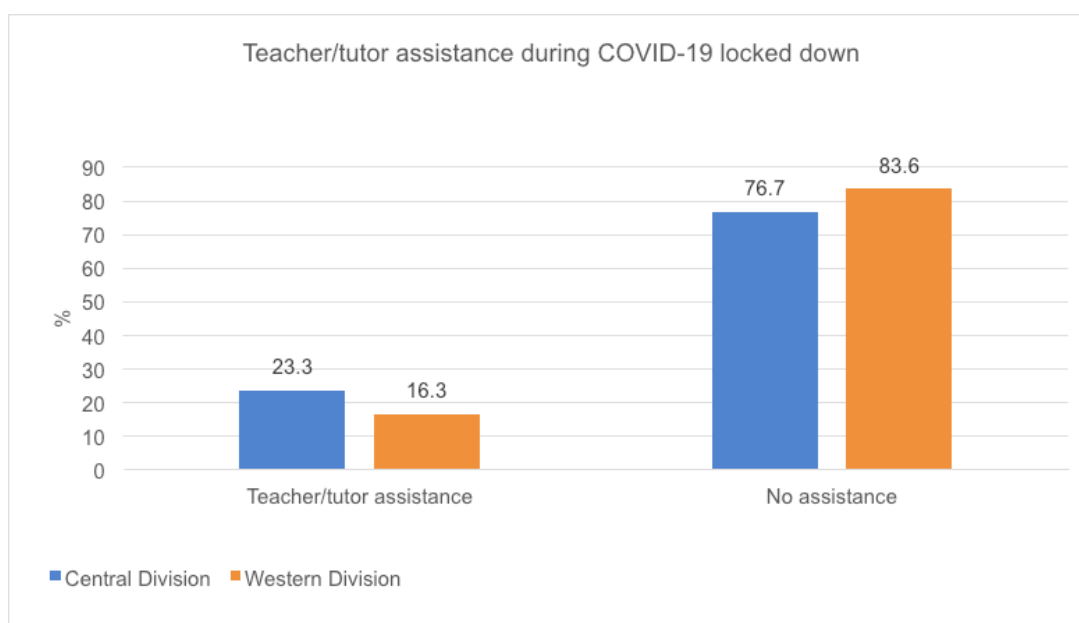


Figure 19: Teacher/tutor assistance for learning

A lot of the homeschooling supervision was done by the women and this added to their already packed daily schedules. They found it challenging to teach, cook, clean and generally maintain the home. Mothers who were not educated themselves, found this even more challenging. Another challenge is that of the tendency for children to spend a lot of time playing video games, online games and using other unnecessary applications on their smart phones. This was often more interesting than engaging in home schooling activities.



### 5.5.1 How Parents Addressed the Impacts - Coping Mechanisms

Some parents attempted to tackle home schooling by setting rules for learners in their households to spend time learning and doing school activities after dinner each night. Installation of school friendly apps was also another way to ensure that learners had access to learner friendly content. Learners spent a lot of time using mobiles and other devices connected to the internet and parents saw this as an opportunity to engage their children in learning activities.

Some community members viewed homeschooling as an opportunity to connect with learners in their households. Learners were in a comfortable environment and were comfortable asking questions regarding their learning activities. Parents confirmed that having the more mature learners in their households around the house was helpful as they were able to allocate and distribute household chores.

In preparation for their return to school, parents were not only involved in getting school attire and stationery prepared but also had to wean their children from the idea of sleeping in, at least a week before the resumption of classes. All the parents were relieved at the idea of school reopening as they could be sure, their children would be in school learning along with their peers as opposed to loitering around the community.

Parents tried their best to keep their children occupied by allocating certain times during the day [mostly after dinner] to engage in learning activities. One very helpful initiative from the government was allowing students to go back to school without strict regulations on uniforms. Parents just had to pack lunches and send their children to school. This was a relief because most of the school uniforms had become a little tight after so many weeks at home.

The government subsidized bus fares have been a huge relief for some families who are already struggling to feed and clothe their children. Some neighbors who were well educated offered to provide lessons for children with parents who were less educated. There were also teachers in these communities who provided vital additional support for learners who needed it.

### 5.5.2 Education Needs

Several education needs including workbook and online learning support and counselling services were identified by the communities. All the communities involved in this research identified and prioritized these education needs (see Figure 20).



Figure 20: Education needs for all communities

### 5.6 Impact of COVID-19 on Cultural and Religious Activities

“*Na Soqo*” (Gathering/Function) is an important part of the iTaukei culture and tradition (Indigenous Fijian) and is often associated with financial obligations. Responses from the surveyed communities show that some families are still able to continue with these monetary contributions but less than before COVID-19. There was no mention of any difference in amount however, some respondents that they still contribute any amount from FJD\$20 to FJD\$50 (USD10-24) towards funerals. They still have a source of income and are still mindful of their contributions. Responses also showed that some are not able to contribute at all due to financial constraints. There is no mention of being mistreated for not being able to contribute towards funerals or the church financially; however, some stress themselves by going out of their way to meet these financial obligations.



In addition, some churches cancelled monetary obligations. For instance, in Vakabuli village the church cancelled all monetary contributions during the lockdown period; however, for funerals the villagers helped out in terms of food items.

Some families are not burdened with these monetary contributions (e.g. funerals or the usual village soli – monetary collection) because their mataqali has a pool of resources including finance to cover for any function within their mataqali.

Moreover, a participant mentioned that in the midst of COVID-19 it all depends on an individual and how beneficial the function is.

*“It all depends on what kind of person you are, if you think it is beneficial than do it if not than no, but it all depends on the individual” (FG\_FJ23)*

On the other hand, a participant mentioned that for women and their husbands who live in the village they do not see COVID-19 as a barrier or an excuse for not giving the amount of money that is required of them.

*“For us women and our husbands staying in this village we did not see COVID-19 as a barrier or to be an excuse for not giving the amount of money that is required of us. Any soli of the Vanua and Lotu we will keep on giving. Even if we give in small amount, we will ensure that before the end date of our soli we must reach to our full amount” (FG\_FJ25)*

## 6.0 Mapping of Stakeholder Support to Communities

During FGD, the communities mapped the multiple government and non-governmental stakeholders and resources they are providing for the communities. For the communities in the Central Division, government, NGOs, academic institutions and churches have provided support including e.g. food supplies, farming equipment, seedlings, market support and training for the households. For the Western Division, FRIEND Fiji has been supporting all communities before and during COVID-19 (see Figure 21).



### FIJI STAKEHOLDER MAPPING:

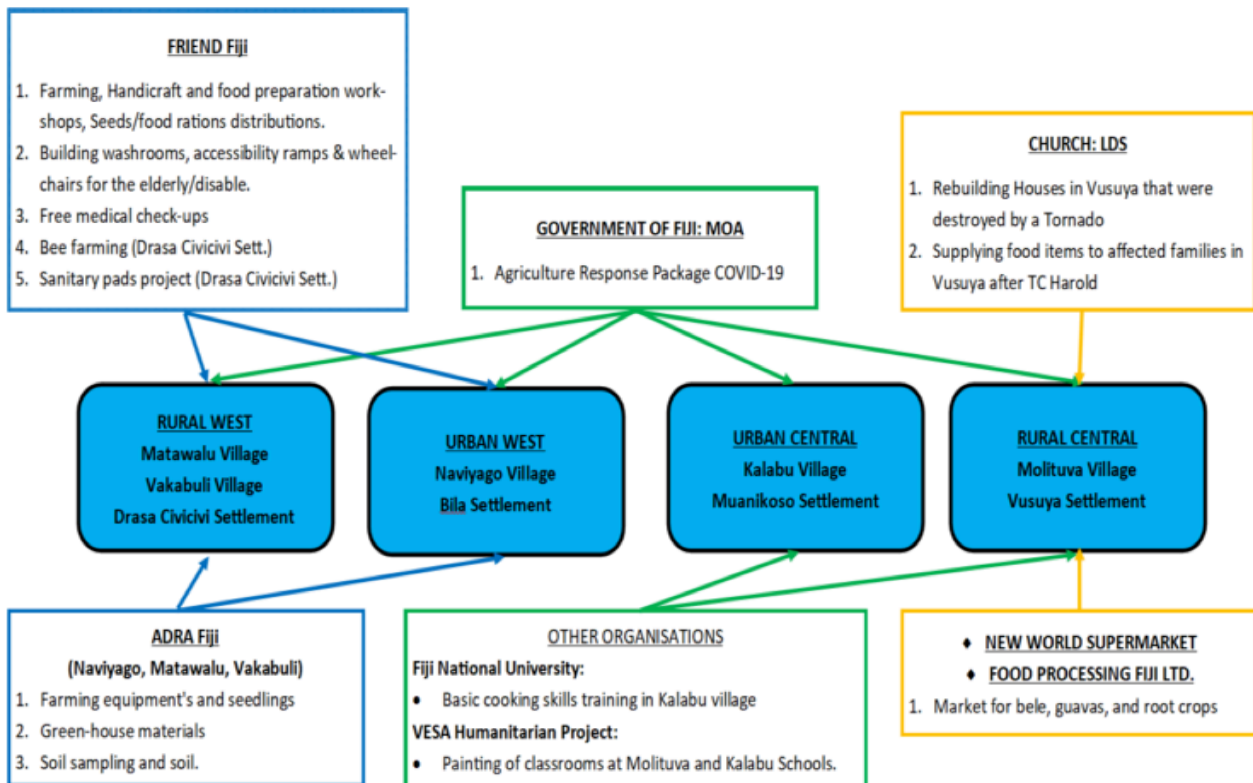


Figure 21: Mapping of Stakeholders supporting communities in Western Division

## 6.1 Support Needed by Communities

The main needs identified by communities to help them cope with the COVID-19 crisis are:

- more seedlings, farming equipment and fertilizers for home gardens;
- more medicine supplies for patients suffering from NCDs and other diseases;
- diversification of home gardens to include pulses, fruits, herbs, small livestock and crops (promote the 9x9 farming model from FRIEND);
- support for small businesses and informal businesses at villages;
- training on food preservations, healthy cooking recipes, diversifying sources of income in COVID-19 times.



## 7.0 Conclusion

COVID-19 is impacting communities and households in Fiji, both positively and negatively. Preventative interventions taken by governments are affecting the socio-economic status of studied communities. Households have increased involvements in home gardening and are producing many vegetables, fruits and root crops. The promotion of home gardens as a source of fresh foods is working well; however, there is a need to adjust home garden strategies to increase the diversity of planting materials and seedlings (to include vegetables, pulses, seeds, fruits and herbs). Inclusion of small livestock such as chicken, ducks and pigs should be promoted and supported to provide locally produced meat, eggs, to increase the diversity of local diets. Other key livelihood assets such as access to land, water and education have been impacted by COVID-19 and increased the stress and poverty levels of both urban and rural communities in the study.



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## 9.0 Annex 1. List of Field Researchers

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13. Salote Nasolo
14. Sanita Baleinayawa
15. Sarah Naomi
16. Selai Baleirara
17. Semisi Ketenilagi
18. Sereana Seavula
19. Simione Naivalu
20. Simpson Mewa
21. Tamarisi Korojiuta
22. Tevita Rarokolutu
23. Teyoung Mafutamao
24. Timoci Koliavu
25. Ulita Moce
26. Vika Kalokalo





Pacific Centre for Environment and Sustainable Development



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and urban communities in Fiji