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The U.S. Government's Global Hunger & Food Security Initiative

COVID-19 Study in rural areas of Guatemala

Long-term impacts on food security and nutrition in the Western Highlands*

OBJECTIVES

Since the beginning of the COVID-19 pandemic, Guatemalan farmers have endured multiple challenges brought about by national and local restrictions to movement as well as disruptions in agricultural value chains. Similarly, farmers have been exposed to several external shocks such as ETA and IOTA tropical storms that hit the country in late 2020 and the recent conflict in East Europe and price crisis. This study examines the long-term effects of the COVID-19 environment on the food security and nutrition of rural households in the Western Highlands of Guatemala. The analysis is based on information from a panel of 1,262 smallholder households in the departments of Huehuetenango, Quiché, and San Marcos, collected during four survey rounds during November-December 2019 (face-to-face), May-June 2020 (by phone), May-June 2021 (by phone), and May-June 2022 (by phone). The study places special emphasis on evaluating changes in agricultural and non-agricultural income sources—including remittances—and changes in dietary diversity—including consumption of animal-sourced foods (ASF) and fruits and vegetables (F&V)—at the household level, as well as among women between 15 and 49 years and children between 6 and 23 months. The results show some improvements in 2022 in income, food security and household dietary patterns in relation to previous years, but the levels are still lower than those reported before the pandemic (in 2019). The study also explores the effect of recent changes in the availability and prices of agricultural inputs faced by the smallholders as a result of the war between Ukraine and Russia, among other factors.

MAIN FINDINGS

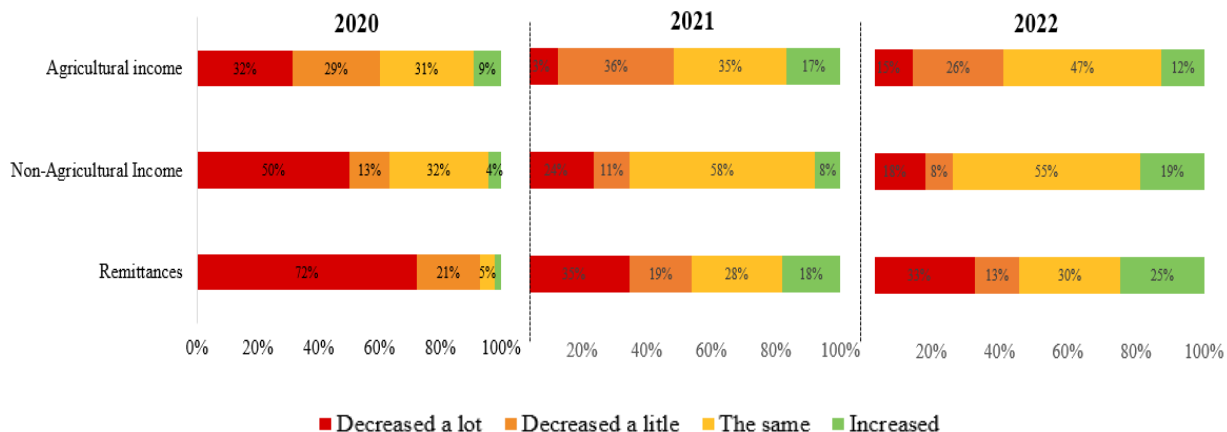
1. As in 2021, income improvements are observed in 2022 compared to the beginning of the pandemic in 2020, but without reaching the levels of 2019. 41% of the households still report a lower agricultural income (15% a severe decrease) and 26% lower non-agricultural income (18% severely) in 2022 compared to 2019. Among those households that received remittances in 2019, 46% still report a decrease in the amount received before the pandemic. However, unlike 2020 and 2021, in 2022 there is a higher percentage (almost one third) of households that report not having done anything to deal with the drop in income.



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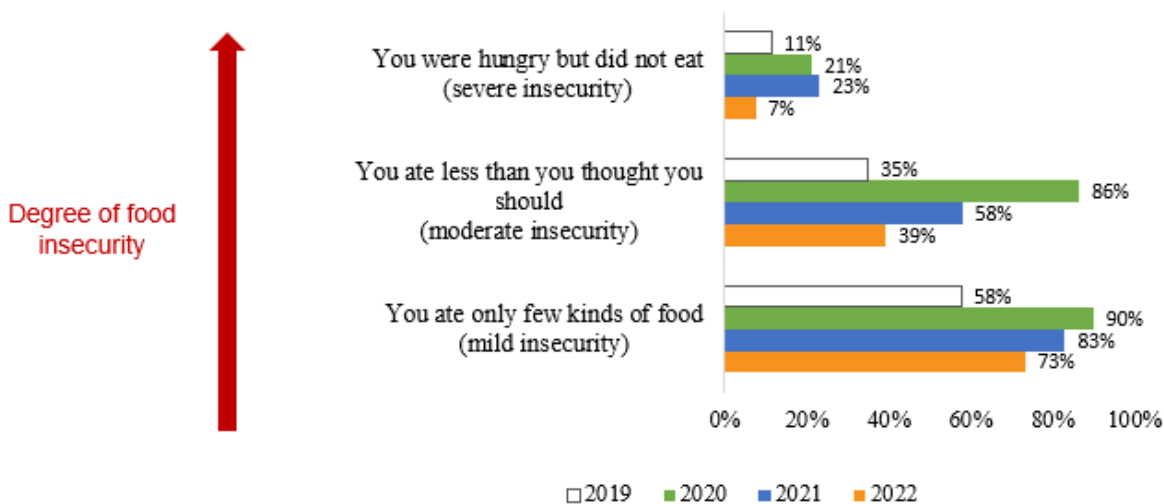
Changes in income sources with respect to 2019



Note: The total sample is 1,262 households. The change in remittances is based on samples of 392, 353, and 387 households in 2020, 2021, and 2022, respectively, who report receiving remittances in the baseline survey and/or each follow-up survey. Although the questions in the questionnaire were symmetrical, some categories were aggregated to facilitate the presentation.

- Regarding food insecurity, the prevalence of episodes of mild and moderate insecurity is lower in 2022, compared to 2021 and 2020, but still slightly higher than in 2019. In the case of episodes of severe insecurity, the prevalence in 2022 decreased considerably and is lower than in 2019.

Food insecurity experiences in 2019, 2020, 2021 and 2022



Note: The sample includes 1,262 households that reported having experienced one of the situations described above (over the months prior to each survey). These episodes are part of the Food Insecurity Experience Scale (FIES).



- In 2022, there is a recovery in dietary diversity at the household level. The household dietary diversity score (HDDS, which ranges from 0 to 12), shows a decrease from 6.8 in 2019 to 6.4 in 2020 and 6.7 in 2021; but increases to 6.9 in 2022. Within the food groups consumed, there is a decrease in the diversity of animal source food (ASF) consumption towards a greater diversity in the consumption of fruits and vegetables (F&V). In all the seven categories of the ASF indicator, the percentage of households reporting consuming each of these categories decreased (including eggs, chicken, and dairy products). At the same time, there is an increase in the consumption of the five categories of F&V (except vegetables rich in vitamin A). This analysis, however, does not allow to determine net changes in nutrient intake since no detailed consumption data were collected.
- On the other hand, the dietary diversity among women of reproductive age did not change (the dietary diversity score, which varies from 0 to 9, remained around 4.5-4.6 between 2019 and 2022), while the dietary diversity among children 6 to 23 months old increased (the dietary diversity score, which varies from 0 to 7, went from 3.4 in 2019 to 3.9 in 2020, to 3.5 in 2021, and 3.9 in 2022). These trends point to potential changes in intra-household allocation of foods in response to the pandemic and other external shocks, where younger children appear to have been prioritized over the past years (including 2020, 2021, and 2022).

Dietary diversity at household, women, and children level in 2019, 2020, 2021 and 2022

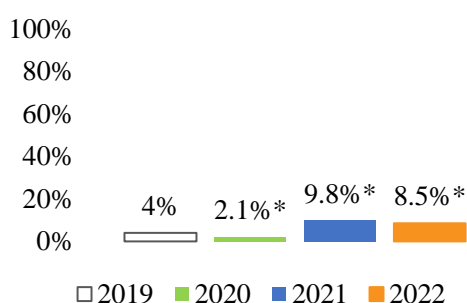
Indicators	2019	2020	2021	2022
Household Dietary Diversity (score 0-12)	6.80	6.51*	6.68	6.91
Dietary diversity for women 15-49 years old (score 0-9)	4.50	4.51	4.59*	4.55
Dietary diversity for children 6-23 months old (score 0-7)	3.38	3.86*	3.55*	3.90*

Note: The first row reports the average dietary diversity score across the 1,262 households interviewed over the four surveys; this score measures the number of different food groups that the household member consumed during the last 24 hours prior to each survey, including: 1. Cereals and grains; 2. Roots and tubers; 3. Vegetables; 4. Fruits; 5. Meats, poultry, and offal; 6. Eggs; 7. Fish and seafood; 8. Legumes and nuts; 9. Milk and milk products; 10. Oils and fats; 11. Sugar; and 12. Others. The second and third rows report the average dietary diversity for the selected woman 15-49 years and child 6-23 months of age (the number of surveyed households with women in 2019, 2020, 2021, and 2022 is 1,017; the number of households with children is 225 in 2019, 168 in 2020, 168 in 2021 and 143 in 2022). These dietary diversity scores measure the numbers of different food groups that the woman and child consumed during the last 24 hours prior to each survey. The nine food groups in the diversity of women's diets are: 1. Cereals, grains, roots, and tubers; 2. Dark green vegetables; 3. Other fruits and vegetables rich in vitamin A; 4. Other fruits and vegetables; 5. Offal; 6. Meat, chicken, and fish; 7. Eggs; 8. Legumes, nuts, and seeds; and 9. Milk and milk products. The seven food groups in the diversity of the child's diet are: 1. Cereals, grains, roots, and tubers; 2. Legumes and nuts; 3. Dairy products (milk, yogurt, cheese); 4. Meats (beef, pork, fish, chicken, organ meats); 5. Eggs; 6. Fruits and vegetables rich in vitamin A; and 7. Other fruits and vegetables. “*” Indicates that the difference in the score relative to 2019 is statistically significant at 95% confidence.

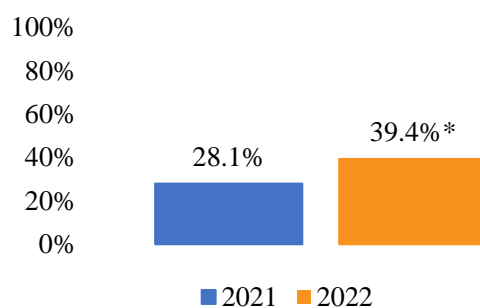


- The increase in intention to migrate with respect to 2019 continues in 2022. Over 8% of households report that at least one household member intends to migrate over the next 3 years (compared to 4% in 2019). On average, the intention to migrate is higher among those households that report a decrease in income (11% for households that report lower income in 2022 and 7% for the rest of the households), as well as for those located in the department de San Marcos (26%) and those where at least one household member experienced a permanent job loss (12%). Around 39% of the households similarly report that they consider migrating a better option than staying in their community (versus 28% in 2021).

Panel A: If any household member has intention to emigrate in the next 3 years



Panel B: Migration is a better option than staying in the community



Note: The figures are based on 1,262 interviewed households. Panel A shows the percentage of households surveyed in which at least one member of the household intends to migrate outside the country in the coming years. Panel B shows the percentage of households in which the person interviewed considers that migrating is a better option than remaining in the community. “*” Indicates that the difference in the score in relation to 2019 in Panel A and in relation to 2021 in Panel B is statistically significant at 95% confidence.

- In 2022, households reported more direct and indirect exposure to COVID-19, as well as an increased access to vaccines against COVID-19. Particularly, 7% of the households report that at least one household member was infected with COVID-19 (compared to 3% in 2021), while 30% report knowing someone in their community who was infected (compared to 14% in 2021). Regarding COVID-19 vaccines, 7 out of 10 households indicate that at least one household member older than 12 received at least one dose between 2021 and 2022. Rejection or mistrust towards the vaccine is the main reason why some households did not receive any dose. Among households with children between 5 and 12 years old, 4 out of 10 report that at least one child received at least one dose.
- The study finds positive changes in some hygiene practices (which continue since the beginning of the pandemic) and negative changes in certain perceptions of households. A significant percentage of households indicate that they use soap or bleach to wash their vegetables before cooking or consuming them (64% in 2022 compared to only 15% in 2019). On the other hand, households have increased their level of mistrust towards people (since 2020) and show greater concern about their current economic situation than in the future.



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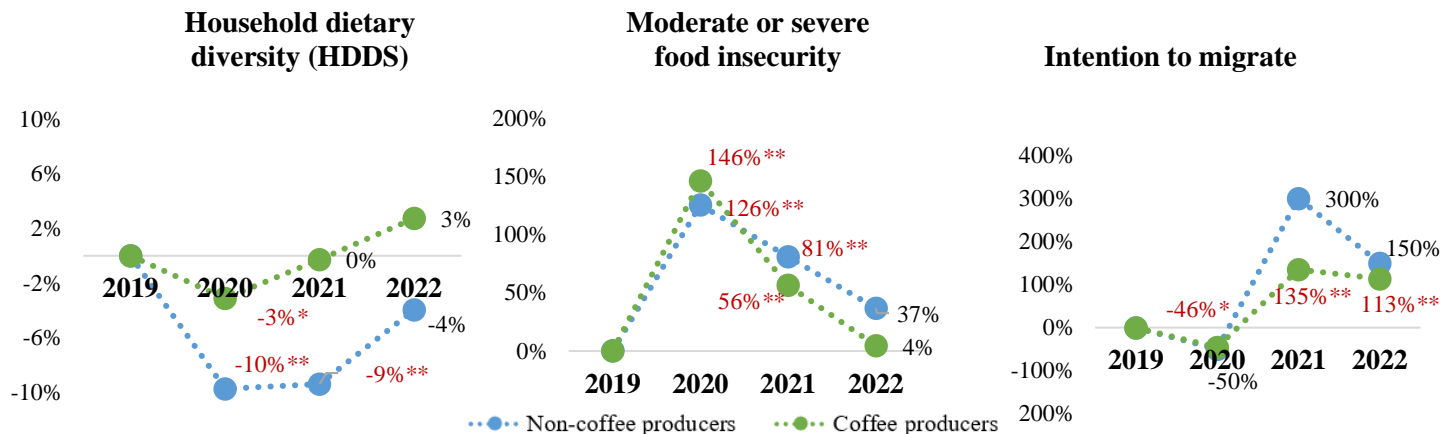
8. Regarding the effects of the war between Ukraine and Russia, households report changes in the availability and prices of agricultural inputs. More specifically, households indicate a slight reduction in the availability of agricultural inputs in 2022 compared to 2021 (before the conflict), and significant increases in the price of agricultural inputs. The price of chemical fertilizers, for example, increased by 50% between 2021 and 2022 (from 250 Quetzales per quintal in 2021 to 450 Quetzales in 2022). The cost of labor also increased by 50% between 2021 and 2022, although this increase may be associated with the general shortage of workers reported by households.
9. Food prices continued to rise in 2022. Nine out of 10 households report increases between 2021 and 2022 in prices across all the five food groups considered in the study (grains and cereals; roots and tubers; fruits and vegetables; red meat and poultry; dairy products). In terms of key staple foods, the largest price increases were registered for oil (with an increase of 50%, from 12 Quetzales per 1-liter bottle in 2021 to 18 Quetzales in 2022); beans (increase of 40%, from 5 Quetzales per pound in 2021 to 7 Quetzales in 2022), and poultry (increase of 28.5%, from 14 Quetzales per pound in 2021 to 18 Quetzales in 2022).
10. When analyzing the evolution of changes in dietary diversity, food insecurity (moderate and/or severe), and migration intentions since the start of the pandemic, some heterogeneity is observed among households.
 - a. First, in terms of the gender of the household head, households headed by men reported a decrease in the intention to migrate in 2020, as opposed to households headed by women. In the following years (2021 and 2022), however, the intention to migrate in both groups of households increased considerably, while the increase was greater among households headed by women.
 - b. Distinguishing between households that produce and do not produce coffee among their main crops, the dietary diversity score among non-coffee producing households decreased by approximately 10% in 2020 and 2021 (with respect to 2019), while for coffee producers this reduction was only 4% in 2020 and then recovered. The increases in the prevalence of food insecurity were, on the other hand, similar among both groups of households. Regarding the intention to migrate, non-coffee producers reported higher increases in 2021 and 2022, although these changes are not statistically significant.



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Evolution in dietary diversity, food insecurity, and intention to migrate among coffee-producing and non-coffee-producing households (percentage change with respect to 2019)



Note: The figures show the percentage change in the outcome of interest with respect to 2019 for each survey round and for each subgroup. The total number of households interviewed is equal to 1,262, where 1,036 are coffee producers, and 226 are non-producers. Asterisks indicate whether the percentage changes between the 2019 baseline and each follow-up survey are statistically significant at the 95% (**) or 90% (*) levels.

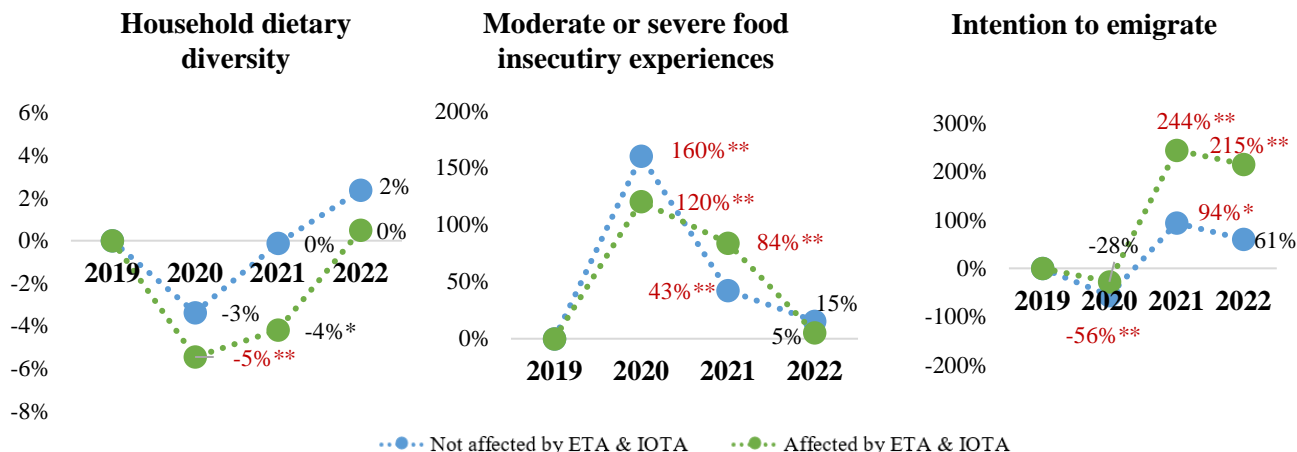
- c. Households located in the department of San Marcos reported more substantial changes than the rest of the households (located in Huehuetenango and Quiche) in terms of dietary diversity, food insecurity, and intention to migrate. The dietary diversity score among households in San Marcos decreased by 21% in 2020, and barely returned to the pre-pandemic level in 2022. The experiences of food insecurity of households in San Marcos increased fivefold in 2020 and the intention to migrate grew more than five times in 2021 and has remained high in 2022.
- d. Regarding the possible impact of tropical storms ETA and IOTA, which affected the country towards the end of 2020, it appears that these events delayed the recovery until 2022 in dietary diversity for households that reported being affected by the storms, as opposed to households that were not affected. Similarly, although in 2020 the increase in the prevalence of food insecurity was widespread, the storms possibly contributed to a higher frequency of episodes of food insecurity in 2021 among affected households (84% higher compared to 2019 versus 43% in the case of not affected households). The intention to migrate, in turn, more than tripled in 2021 among affected households, while it doubled among unaffected ones.



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Evolution in dietary diversity, food insecurity, and intention to emigrate for households affected and not affected by tropical storms households (percentage change with respect to 2019)



Note: The figures show the percentage change in the outcome of interest with respect to 2019 for each survey round and for each subgroup of households. The total number of households interviewed is equal to 1,262, where 544 were affected by the storms (ETA and IOTA) and 718 were not affected. Asterisks indicate whether the percentage changes between the 2019 baseline and each follow-up survey are statistically significant at the 95% (**) or 90% (*) levels.

11. In summary, improvements in several indicators of food and nutrition security of rural households in the Western Highlands are observed in 2022 relative to 2021 and in particular relative to 2020, but the levels are still not similar to the pre-pandemic ones. About 47% of households still report lower a income than in 2019, while the prevalence of episodes of mild and moderate food insecurity is still slightly higher. The levels of dietary diversity at the household level show an important recovery, although the decrease in the diversity of the consumption of foods of animal origin (ASF) persists towards a greater diversity in the consumption of fruits and vegetables (F&V). The intention to migrate has also increased considerably since 2021. On the other hand, households report permanent positive changes in some hygiene practices. Food prices continue to rise and the recent war between Ukraine and Russia seem to have contributed to this growth, as well as with the significant increase in some agricultural inputs such as chemical fertilizer. Finally, some heterogeneity is observed between households in the evolution of their dietary diversity, food insecurity, and intention to emigrate between 2019 and 2022 where, for example, non-coffee producers or households affected by ETA and IOTA storms appear to have suffered greater difficulties in recent years. In a context of recurring external shocks, it is important to continue monitoring the food and nutritional security of households in vulnerable areas of the country.

*Study, in progress, prepared by Manuel A. Hernandez (Senior Research Fellow at IFPRI), Francisco Ceballos (Research Fellow), Cynthia Paz (Research Analyst), and Maria Lucia Berrospi (Research Assistant). We specially thank Francisco Olivet and the team of O&M Estudios y Proyectos for their valuable collaboration in the data collection, and Carlos Rivera for his technological support. This study was made possible through support provided by Feed the Future through the U.S. Agency for International Development. The contents and conclusions of the study are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development or the International Food Policy Research Institute. Contact email: m.a.hernandez@cgiar.org (Manuel A. Hernandez).

