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UNPACKING THE IMPACTS OF COVID-19 ON LONG-TERM FOOD SECURITY

The challenge of undernourishment

In 2019, more than 10 percent of people around the world experienced food insecurity. The COVID-19 pandemic has further exacerbated this crisis in the short term. If lessons from previous pandemics and economic crises hold true, there is real risk that the adverse effects of COVID-19 on food security will persist. Policies should be considered to reduce long-term risk to food insecurity.

We use undernourishment as our core indicator of food insecurity driven by changes in mean caloric consumption and the distribution of that consumption within the population. Using the International Futures model, we project trends in undernourishment to 2040 across 186 countries. We then develop three scenarios to project the effects of COVID-19 on undernourishment:

- ✔ A baseline *COVID-19 Current Path* scenario uses existing data and trends to simulate the impacts of COVID-19 through changes in economic growth, inequality, education loss, and rises in government debt.
- ✔ A more pessimistic *COVID-19 Unequal Paths* scenario describes a world in which the effects of the COVID-19 pandemic worsen and inequalities between countries rise, with additional adverse effects primarily falling on low- and middle-income countries.
- ✔ A counterfactual *No-COVID* scenario projects long-term development trends globally, had the COVID-19 pandemic not occurred.

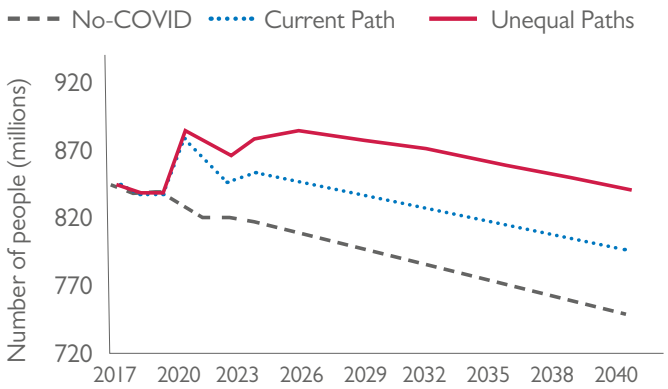
PHOTO: FINTRAC INC.

A family in Kenya tests new recipes based on nutrient-rich crops, to improve food security and child nutrition.

Quantifying the effects of COVID-19 on undernourishment in 2040

The prevalence of undernourishment is expected to drop between 2020 and 2040 under all three scenarios (Figure 1). Under the *COVID-19 Current Path* scenario, undernourishment is projected to drop from 11.3 percent in 2020 to 8.6 percent in 2040. Under the more pessimistic *Unequal Paths* scenario, undernourishment is projected to drop less, to 9.1 percent. While progress is projected in each scenario, the world is not expected to be on track to end undernourishment in 2040.

Global undernourishment across the three scenarios out to 2040



Source: Author's calculations.

Sub-Saharan Africa continues to suffer from high levels of undernourishment. Undernourishment in the region is projected to decline under the *Current Path* scenario from 22.8 percent of the population in 2020 to 16.1 percent in 2040. Even though such progress is substantial, the estimated levels of undernourishment in sub-Saharan Africa in 2040 (16.1 percent) are higher than the estimated levels of undernourishment in Southern Asia in 2020 (15.2 percent). Simultaneously, sub-Saharan Africa continues to experience rapid population growth. In the pessimistic *Unequal Paths* scenario, this rapid population growth coupled with COVID-19 impacts means that in 2040 more people are projected to suffer from undernourishment than in 2020.

COVID-19 further slows down progress on ending undernourishment and has persistent effects on increasing undernourishment in 2040 relative to a *No-COVID* scenario. To 2040, we project COVID-19 will slow development gains by four to eight years, relative to a *No-COVID* scenario. This is equivalent to an

increase in undernourishment in 2040 of 46.5 million people (*Current Path*) to 90 million people (*Unequal Paths*), relative to a *No-COVID* scenario.

Understanding how COVID-19 affects food security

COVID-19 complicates the challenge of ending undernourishment by 2040. To design effective policies that accelerate progress on food security, it is essential to understand how COVID-19 affects food security. Food security is multidimensional and can be related to shortages in production and supply, a lack of economic access to food driven by food prices and household income, and a lack of healthy and diverse diets coupled with low levels of food utilization.

COVID-19 and economic access to food

COVID-19 is projected to result in a persistent downturn of household income in 2040, relative to a *No-COVID* scenario. Such a drop in household income affects food security for the poorest households that already spend most of their income on food. In addition to an average drop in income and caloric consumption, COVID-19 is projected to result in further increases to the unequal distribution of caloric consumption across households. Combined, these effects are the two primary drivers of long-term food insecurity. Our projections suggest that reduced caloric intake would not be temporary. Under our projections, in 2040 caloric intake drops by -9.2 percent in sub-Saharan Africa and -11.3 percent in Southern Asia, relative to a *No-COVID* scenario.

Households tend to prioritize food consumption over other goods and services. Our projections show that households prioritize food consumption by spending a larger share of their income on food, with an +8.9 percent increase in the share of income spent on food in Sub-Saharan Africa and +11.8 percent in Southern Asia in 2040, compared to a *No-COVID* baseline.

These consumption and spending shifts make households more vulnerable to future climate, conflict, or economic shocks because they will consume fewer calories and spend a larger share of their limited incomes on food. COVID-19 could be a multiplier on future food crises by increasing food insecurity directly, increasing the number of households on the brink of food insecurity, and reducing resilience to shocks.

COVID-19 and dietary diversity

The income effects of the pandemic are also expected to change the types of food households consume. For example, our projections suggest that households might shift diets away from meat and towards staple crops. Our projections show a drop in meat consumption of -2.0 percent in sub-Saharan Africa and of -2.5 percent in Southern Asia to 2040, relative to a *No-COVID* scenario.

As such, COVID-19 not only lowers caloric intake but also affects dietary diversity. Consumption of nutrient-rich foods such as meat and fish are already relatively low in many developing countries. Dietary diversity and sufficient micro-nutrient intake from a diverse diet are essential for children, pregnant and breastfeeding women, and overall health of the population. Thus, dietary shifts away from meat indicate another dimension of worsening food security.

BY 2040, RELATIVE TO A NO-COVID SCENARIO HOUSEHOLDS

	REDUCE CALORIC INTAKE	RAISE SHARE OF HH SPENDING ON FOOD	REDUCE MEAT CONSUMPTION	RISE IN UNDERNOURISHMENT
	-9.2%	+8.9%	-2.0%	+13.8 million
	-11.3%	+11.8%	-2.5%	+14.4 million

COVID-19 and food supply

COVID-19 directly impacts food supply through its effects on labor, outbreaks of the virus in food processing facilities, restrictions on food trade, and other impacts on the supply-chain. However, many of these effects are temporary and are unlikely to last far beyond the pandemic. As a result, the effects of COVID-19 on long-term food supply are relatively small and largely stem from indirect effects through changing patterns of economic growth.

In the long term, reductions in economic growth have indirect effects on food security through reduced investments in agriculture. To 2040, COVID-19 negatively affects agricultural investments in the most food-insecure regions relative to a *No-COVID*-scenario. In our projections, cumulative investment in agriculture between 2020 and 2040 drops by -8 to -12 percent in Southern Asia and by -5.6 to -10.4 percent in sub-Saharan Africa, relative to a *No-COVID* scenario.

Table 1. Cumulative agricultural investments per world region for the period 2020-2040 in billion US$, for *No-COVID* (NC), *Current Path* (CP), and *Unequal Paths* (UP) scenarios

Region	Cumulative agricultural investments (2020-2040) in billion US$			Percent decline	
	NC	CP	UP	CP to NC	UP to NC
Eastern Asia	7,042.4	7,020.9	6,802.5	-0.3 percent	-3.4 percent
Southeast Asia	1,653.1	1,553.7	1,501.0	-6.0 percent	-9.2 percent
Southern Asia	2,938.8	2,701.2	2,585.1	-8.1 percent	-12.0 percent
Oceania	176.1	174.3	168.4	-1.0 percent	-4.4 percent
Latin America and the Caribbean	733.8	691.4	669.3	-5.8 percent	-8.8 percent
Middle East and North America	1,211.4	1,193.8	1,155.1	-1.5 percent	-4.7 percent
sub-Saharan Africa	1,243.7	1,173.4	1,114.7	-5.6 percent	-10.4 percent

Note: The columns at the right show the relative decline in agricultural investments.
Source: Author's calculations.

Before the pandemic, projections of growth of domestic agricultural production in most low-income countries were outpaced by the increase in demand for agricultural products. Thus, even without COVID-19, many low-income food-insecure countries would become more food import-dependent over time. COVID-19 is worsening this outlook, slowing down growth in agricultural production in food-insecure regions and making them more reliant on food imports. This is especially true for sub-Saharan Africa.

For example: in 2040, our projections show that food self-sufficiency will decrease in the Democratic Republic of the Congo, Madagascar, and to a lesser extent India, Tanzania, Mozambique, and Mali, relative to a *No-COVID* scenario. However, the overall impact of COVID-19 on increased import dependence is in the order of 1-2 percent to 2040, whereas the projected increase in food import dependence (agricultural demand outpacing domestic food production) irrespective of COVID-19 is in the order of 10-20 percent for many countries. Higher food import dependence makes countries more vulnerable to shocks in trade and food prices, especially of staple crops, which can further increase food insecurity.

PHOTO: MORGANA WINGARD, USAID

A woman in Senegal cultivates sweet potato.

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PHOTO: KELLEY LYNCH

Livestock in Tigray, Ethiopia.

Policy strategies to end undernourishment

The world is not on track to end undernourishment by 2040. All the COVID-19 scenarios considered here describe a world in which countries are affected by the impacts of COVID-19 without governments implementing policies to revert and overcome these adverse effects. We suggest some key policy strategies for governments and the international community to accelerate food security progress and minimize the long-term effects of COVID-19 thereon.

• Food security policies need to be integrated and address economic food access, food supply, and dietary diversity. COVID-19 negatively affects food access, agricultural investments, import dependence, and meat consumption. Policies need to be integrated across these domains and address the diverse fundamental drivers of food insecurity.

• Particular attention should be given to addressing economic food access for the most vulnerable communities. The future of food security is shaped mainly by changes in household income driving mean consumption patterns and the inequality between households with regards to caloric consumption. Policies increasing household income and overcoming inequality will most effectively bring down long-term food insecurity. In addition, addressing economic food access will make households more resilient to future shocks. Long-term food insecurity combines situations of chronic insecurity with shocks from climate change, conflicts, COVID-19, and other impacts. Raising household incomes, especially those below or just above the food security threshold, will increase household resilience and minimize the impacts of future shocks on food insecurity. Our current projections suggest the opposite, with COVID-19 making households more vulnerable to future shocks by lowering mean caloric intake and shifting consumption patterns and diets. Rebuilding and accelerating resilience at the household level should be a key priority of policies focused on post-pandemic recovery.

• Food insecurity continues to be disproportionately high in sub-Saharan Africa. Policies designed to address food security globally should have a stronger focus on this region. Today, a large percentage of the food insecure population lives in sub-Saharan Africa, which will only rise by 2040.

• Particular attention should be given to the food security of children and women. Much food insecurity stems from a lack of calories, micro-nutrients, and a healthy and diverse diet. This is especially important for children and women who are pregnant or breastfeeding. Any reduction in meat consumption within low-income countries may negatively affect current healthy and diverse dietary patterns, further increasing the food security challenges posed by COVID-19.

Policymakers and the international community should turn this crisis into an opportunity. Policies implemented today should balance the need for direct emergency relief and pandemic control to minimize the effects of COVID-19 and the virus spread with policies that accelerate economic and human development beyond the pandemic. The proposed policy strategies to end undernourishment are not new, but COVID-19 further emphasizes the need for action on these policy terrains to recover and accelerate progress on food security across countries and households.

Our approach

International Futures is a global integrated assessment model that produces long-term projections of economic and human development for 186 countries. The model integrates sub-models representing agriculture, demography, economy, governance, education, infrastructure, health, and climate change, and focuses on modelling these systems as well as the interactions between them. The model is open source and underlying documentation can be found here.

The full results of this analysis are available here.

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