

**Yale** *Institute for Global Health*

2022 Yale Institute for Global Health Case Competition

## **Addressing Childhood Malnutrition in Haiti**

**2022 Yale Institute for Global Health Case Competition Case Writing Team**

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## Case Prompt

Data from the World Bank suggests that about 46% of Haitians are undernourished as of 2019 (World Bank, 2019). In recent times, the burden of malnutrition in Haiti has been worsened by recurring natural disasters and political instability (UNICEF, 2021). Efforts to address malnutrition were underway before the 2021 earthquake and achieved some gains. However, the country's geographic location makes it vulnerable to extreme weather events that have increased in recent decades due to climate change. In addition, the Covid-19 pandemic has exacerbated the economic downturn and food insecurity in the country. Children are most at risk of malnutrition and Haiti has the highest rates of childhood underweight and wasting in the Latin America and the Caribbean region. An estimated 217,000 Haitian children suffered from acute malnutrition in 2021, a 61% increase from 2020 (UNICEF, 2021). Childhood malnutrition has been linked with low life expectancy, depression, anxiety, low immune function, and poor social and economic outcomes.

A coalition led by the Ministry of Health and Ministry of Environment of Haiti has put forward a Call for Proposals for qualified organizations and consortiums to develop interventions to address childhood malnutrition in Haiti. The coalition will fund a 1-year pilot of the program deemed to have the most promise within the budget of \$400,000.

Each team is expected to present themselves as an organization responding to the Call for Proposals. Successful proposals will consider strategies for integrating long term nutrition programming into humanitarian emergency response and will also address the coordination of organizations and different stakeholders.

Teams will have 10 minutes to introduce their organization or consortium, present their proposed solutions including rationale, implementation approach, required resources, risks and mitigation plans, and partnership and governance approach. Additional five minutes will be allowed for teams to respond to questions from the judges. The judges are representatives from the Haiti Ministry of Health, Ministry of Finance and Ministry of Environment who will jointly evaluate the solutions based on the following criteria:

1. Feasibility - The intervention should be culturally sensitive, cost-effective, operationally feasible, and must demonstrate impact within the 1-year pilot period.
2. Scalability - Teams should specify the population covered by the pilot proposal and describe a path to scale-up and integrate into existing services/systems if successful. The intervention should also consider ways to mitigate the systemic power inequities common in global health.
3. Multidisciplinary approach - The intervention should acknowledge the complexity of malnutrition in Haiti, address multiple facets of the problem including (but not limited to) the political, agricultural, climate-related and societal components.

4. Evidence based - There should be prior research to support the idea that the proposed intervention is likely to work
5. Innovation - The intervention should be original and different from existing interventions that have been tried in Haiti.
6. Learning Plan - Teams are expected to put in place a plan to measure the progress of the proposed intervention, identify any unintended consequences and apply relevant course-correction measures.

## **Malnutrition**

Malnutrition is described as a deficiency, excess or imbalance of a wide range of nutrients, resulting in measurable adverse effects on body composition, and diminished clinical outcome (Saunders et al, 2010). It has been historically defined as insufficient intake or uptake of nutrition that leads to a loss of fat-free mass and body-cell mass and causes decreased physical and mental function and impaired clinical outcome (Cederholm et al, 2017). Although malnutrition is more commonly discussed in terms of undernourishment, it encompasses a wide range of acute, subacute or chronic states of nutrition including overnutrition. The World Health Organization (WHO) (2021) describes malnutrition as deficiencies, excesses, or imbalances in a person's intake of energy or nutrients and identifies three broad groups of conditions:

### Undernutrition

Undernutrition occurs when there is insufficient intake of physical energy from calories and nutrients needed to maintain good health. Undernutrition in children refers to the condition in which food intake is inadequate to meet a child's needs for physiological function, growth, and the capacity to respond to illness. Undernutrition results in a loss of body mass and is described as low weight for age. It encompasses both stunting and wasting.

### Stunting

Stunting is used to describe children who are small for their age or more specifically, children who have low height for their age. It is a growth failure that develops over time in children under five. Stunting typically results from chronic or recurring undernourishment although it may have other causes such as repeated infection and diseases that cause poor nutrient intake, absorption or utilization. It is associated with long term functional consequences such as cognitive impairment, impaired brain development, learning difficulty, and limited economic potential (WHO, 2015). It is estimated that half of all child stunting occurs in utero. Mothers who are malnourished are more likely to give birth to underweight children since the nutritional status of newborns is linked directly to maternal nutrition status. When underweight is not treated, the cycle of stunting is set off. Stunting has declined steadily since 2000 from 32.6% to 22% in 2020 (UNICEF, 2021).

### Wasting

Wasting is differentiated from stunting as low weight for height. Regarded as a transient form of undernutrition, wasting is associated with a higher risk of death. It results from insufficient food and/ or having an infectious disease. Because wasting is considered an acute form of undernutrition, it is often the focus of humanitarian efforts aimed at reducing immediate risk of mortality from childhood malnutrition. Both stunting and wasting share common risk factors such as infection, food insecurity, and poor maternal health. The distinction between wasting and stunting is made because it is thought to be useful for developing targeted interventions for

prevention and treatment of either condition. However, both stunting and wasting can be present in a child at the same time (Wells et al., 2019). The presence of one condition may increase the risk for the other and a child may move from one state to the other over time. Children who are both wasted and stunted are considered to have the worst outcomes. Wasting persists at alarming rates, affecting 7% of children under-five globally (UNICEF, 2021).

### Micronutrient deficiency

Micronutrients are essential vitamins and trace minerals that are required for proper growth and development. Micronutrient deficiencies contribute to poor growth and increased risk of illness, disability and mortality (WHO, 2018). Although more commonly seen as a component of undernutrition, micronutrient deficiencies are prevalent in normal-weight and overweight populations, a phenomenon sometimes referred to as “hidden hunger” (Hoddinott, 2013). Both undernutrition and overweight and obesity can further exacerbate the risk of micronutrient deficiencies (Osendarp et al, 2020). The WHO identifies Iodine, vitamin A, and iron as the micronutrients with the highest global relevance. Iron deficiency is the most common micronutrient deficiency worldwide, particularly affecting children, premenopausal women and pregnant women. Iron deficiency anemia affects an estimated 2 billion people globally and is the leading cause of years lived with disability in low and middle income countries (Pasricha et al, 2020).

Iodine deficiency disorders include all the consequences of insufficient iodine intake resulting in inadequate thyroid hormone production. Severe iodine deficiency during pregnancy is associated with fetal hypothyroidism, mental impairment, and increased neonatal and infant mortality. In children, iodine deficiency impairs growth and cognitive and motor function. In adults, goiter and eventual hyperthyroidism are the most common manifestations of iodine deficiency (Zimmerman, 2009). Vitamin A deficiency results in a wide range of eye conditions and is a risk factor for blindness. It also reduces resistance to infections and increases the rate of mortality from measles and diarrhea in children (Hamer and Keusch, 2015).

### Overweight and Obesity

Overweight and obesity result from an imbalance between calorie consumption and use. Specifically, an increased intake of energy dense foods and increase in physical inactivity due to sedentariness are responsible for overweight and obesity. Obesity has been declared an epidemic due to globally increasing rates. Environmental and societal factors including unsupportive policies in the health, agriculture, environment and urban planning sectors contribute to changes in dietary and physical patterns seen around the world. Body Mass Index (BMI) is a screening tool

for overweight and obesity and measures weight in relation to height. An individual is classified as underweight, healthy weight, overweight or obese passed on a range of values. A body mass index (BMI) over 25 is considered overweight, and over 30 is obese (WHO, 2021). Several diet-related non-communicable diseases such as cardiovascular diseases and certain cancers are associated with obesity. Obesity also contributes to the burden of morbidity through depression and musculoskeletal conditions such as lower back pain.

### Disease-related malnutrition

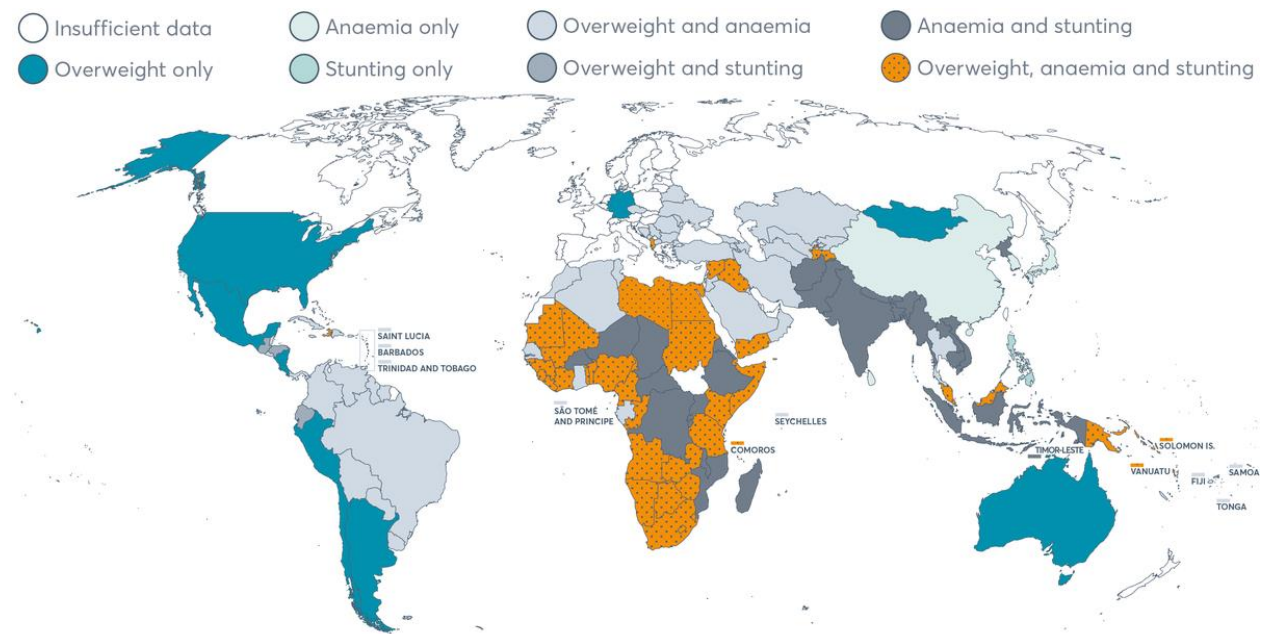
Malnutrition attributed to dietary imbalance from disease is referred to as disease or illness-related malnutrition and is increasingly regarded as a cause of concern among individuals with several comorbidities. The term illness is any state that results in an imbalance of nutrient loss, intake and utilization, and increased energy expenditure including chronic conditions, trauma and surgery. Disease-related malnutrition is a complex syndrome resulting from inadequate intake of nutrients that do not fulfill the patient's physiological requirement and from disease-related systemic inflammatory response. (Schuetz et al, 2021). Disease-related malnutrition commonly develops among patients on hospital admission and worsens due to drug related side effects, loss of appetite, impaired functioning of the digestive system and suboptimal management of inpatient nutrition. Despite the evidence on the prevalence of malnutrition, evaluation of nutritional status is often neglected when patients, especially children are hospitalized (Malek et al, 2019). Active screening and nutritional assessment when incorporated into standard inpatient care are the most effective tools for early recognition and treatment of malnutrition. Medical nutrition therapy, the use of medical products to supplement nutrition requirements is considered a safe and effective intervention for illness-related malnutrition (Reber et al, 2019; Smith et al, 2020).

### **The Global Burden**

Despite targets set to address malnutrition, the 2021 Global Nutrition Report found that malnutrition is still unacceptably high in all regions of the world. It manifests in all age groups from infancy to old age. In particular, the groups most vulnerable to malnutrition are children, adolescents, pregnant women, older people, people who are immunocompromised and poor people. Approximately 462 million adults are underweight globally. The global prevalence of obesity nearly tripled between 1975 and 2016 and 2.2 billion are overweight or obese. Among children under five, 149.2 million are stunted, 45.4 million suffer from wasting, and 38.9 million are overweight. Malnutrition accounts for approximately 45% of mortality in this age group. Globally, obesity and overweight contribute to 4 million deaths and 120 million healthy years of life lost annually (WHO, 2021).

The United Nations declared 2016-2025 the Decade of Action on Nutrition and set a global target as part of the Sustainable Development Goals (SDGs) to eradicate hunger, as measured by the prevalence of undernutrition, by 2030. One of the objectives of SDG 2 is to achieve internationally agreed targets on stunting and wasting in children under five by 2025 (United Nations, 2015). The targets referenced here refer to the WHO's 2012 resolution to reduce the number of stunted children by 40 percent by 2025, bringing the total number of stunted children down from 171 million in 2010 to 100 million in 2025 (WHO, 2012). As the number of people affected by hunger is set to surpass 840 million by 2030, it has become clear that the world will not achieve this goal if current trends continue (United Nations, 2021).

In developing countries, poverty is a key driver of malnutrition. Poverty results in a lack of resources and is associated with low income, food insecurity, and natural disasters. Financial limitation resulting from poverty is responsible for a lack of access to safe, adequate and healthy food in many countries (Siddiqui et al, 2020). In turn, food insecurity compromises people's ability to fulfill the bodily requirement of calories and results in or worsens malnutrition. Additionally, a high prevalence of infectious diseases contributes to malnutrition in developing countries.



### *The Burden of Malnutrition*

*Source: Global Nutrition Report*

In general, poor diet is a common cause of all forms of malnutrition. Poor diet increases one's susceptibility to and severity of infections, and is thus a major component of illness and death from disease. The majority of childhood mortality from malnutrition occurs in low and middle income

countries where there has also been a surge in overweight and obesity. This situation is referred to as the double burden of malnutrition (WHO 2015; Popkin et al, 2019). Children in these countries are more likely to be undernourished while also being exposed to high sugar, high fat diets. The coexistence of undernutrition and overnutrition results in increased incidence of non-communicable diseases while these countries continue to deal with the burden of infectious diseases. This situation has serious implications for policy and the interventions proposed for addressing malnutrition.

## **Social and Economic implications**

Good health is not achievable without proper nutrition, therefore, malnutrition in all its forms may result in ill health. Malnutrition threatens economic productivity and the future of many countries in the world. It is a predictor of national wealth and economic advancement. By impeding economic growth, malnutrition perpetuates a vicious cycle of poverty and ill health that impacts generations (Siddiqui et al, 2020). The mortality and morbidity associated with all forms of malnutrition lead to a direct loss of human capital. It is estimated that a 1% loss in adult height as a result of childhood stunting is equal to a 1.4% loss in productivity of the individual (World Bank, 2006).

Perhaps the biggest economic consequence of the impact of childhood malnutrition is the resulting neurological damage. At the individual level, stunting frequently results in cognitive impairment, learning difficulties and less schooling (World Bank, 2016). This effect on education is directly linked to poorer economic productivity. Stunting in early life results in between 22 and 45% reduction in lifetime earnings (UNICEF, 2015). Consequently, economies with a high prevalence of childhood malnutrition have a lower skilled workforce.

Indirect economic losses from malnutrition include higher health costs since stunting is a predictor of chronic diseases including diabetes and heart disease. The total economic cost of malnutrition is estimated to range between 2 to 3% of GDP on the average and can be as high as 16% for the most affected countries (Global Panel, 2016).

The 2015 Global Nutrition Report (GNR) makes it clear that global progress to reduce malnutrition has been slow and uneven, despite evidence that \$1 invested in nutrition can bring the equivalent of a \$16 economic return. Despite efforts to tackle malnutrition, progress is slow and the burden of poor nourishment continues to negatively impact millions of lives worldwide (United Nations, 2021).

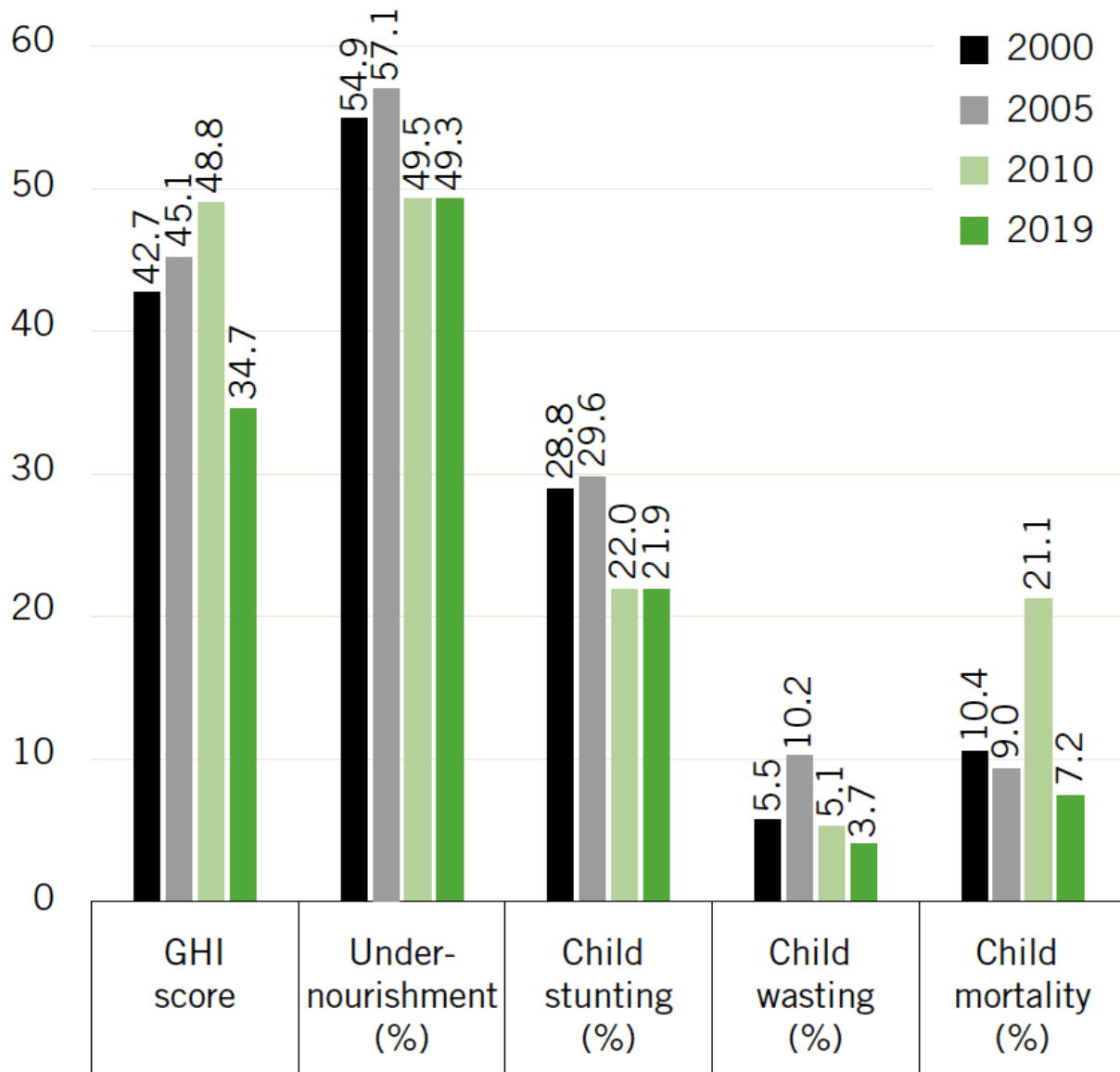
## **Malnutrition in Haiti**

Haiti has experienced a spike in childhood malnutrition in recent times. In 2021, UNICEF projected that up to 86,000 children below 5 years could suffer from malnutrition – more than twice the incidence in 2020 (UNICEF, 2021). Other projections have suggested up to 270,000



cases of under-five malnutrition alone in 2021. Data from the Haitian Demographic Health Survey suggests that about 1 in 5 children is stunted, 1 in 20 is wasted, and approximately 1 in 10 is underweight (Ayoya et al., 2013). It is also estimated that about 1.2 million people in Haiti experience severe hunger. Child malnutrition is considered a major risk factor for disability adjusted life years (DALY) in Haiti (Fene et al., 2020)

Haiti has long had one of the world's highest levels of food insecurity. Around 4 million Haitians - 42% of the population - faced acute food insecurity. In addition to the global causes of malnutrition, there are other multiple interacting factors that are somewhat peculiar to Haiti and that contribute to the development of malnutrition in the country. These factors as discussed below are important to study because they serve as potential targets for future malnutrition-related interventions.



*Haiti's Global Hunger Index Scores and Indicator Values, 2000, 2005, 2010, And 2019.*  
*Source: Global Hunger Index, 2019*

### **Interventions for malnutrition in Haiti**

Interventions to reduce malnutrition in Haiti have increased especially following the 2010 earthquake. These interventions have been implemented through collaborations with the World Food Programme and UNICEF, Action Contre la Faim (ACF), European Civil Protection and Humanitarian Aid Operations (DG ECHO).

The interventions have included promotion of optimal breastfeeding practices (early initiation of breastfeeding, exclusive breastfeeding for 6 months, point-of-use food fortification with multiple micronutrient powders to improve complementary foods for breastfed children ages 6–23 months), vitamin A supplementation for children 6–59 months, deworming for children 1–5 years, zinc for the treatment of diarrhea in addition to oral rehydration salt, iron/folic acid supplementation for pregnant and lactating women, ready-to-use supplementary foods, and integrated management of severe acute malnutrition.

During the peak of the Covid-19 pandemic, for instance, the Ministry of health in Haiti and its international partners instituted a simple but innovative intervention to reduce hospital visits and subsequent Covid-19 exposure for children with malnutrition. Women were taught how to assess the Mid Upper Arm Circumference (MUAC) of their malnourished children at home, and were also informed about how and when to intervene when the child's nutritional status worsens. Children with malnutrition were also provided a read-to-use therapeutic food called “plumpy nut” to supplement their nutrition.

## Country Profile

### Geography & Demographics

Haiti is a Caribbean country bordered by the Dominican Republic to the East, Atlantic Ocean to the North and Caribbean Sea to the West and South. It is situated between Cuba and Puerto Rico. Haiti has an area of 27,750 sq. km (Encyclopædia Britannica, n.d.). The country is divided into 10 administrative regions, 42 districts and 144 municipalities. The country has a population of 11 million as of 2021. About 30% of the Haitian population is below the age of 15 years (World Population Review., n.d.). Creole is the official language in Haiti. Haiti is largely mountainous and it lies on the edge of a large geological plate of rock just below the earth's surface; when the plate shifts, it can cause an earthquake (CountryReports., n.d.).

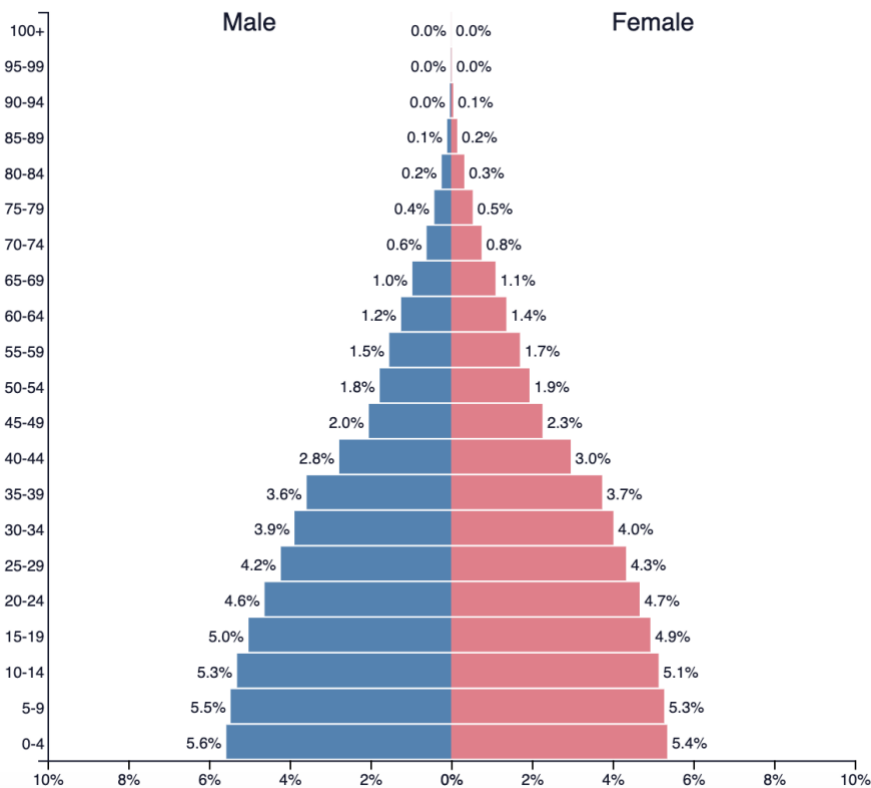


Figure: Haiti's population structure

Source: PopulationPyramid.net

Haiti has experienced several major natural disasters over the past 20 years. These include floods, earthquakes, and hurricanes. In 2010, an earthquake killed more than 200,000 people and caused significant damage to infrastructure and the economy. In 2014 drought caused millions of people to experience food insecurity, exacerbating the problem of malnourishment. More recently, a magnitude 7.2 earthquake and a tropical storm struck in August 2021. Both disasters destroyed

homes and displaced thousands of families. They also contributed to the hunger crisis by damaging drinking water sources and triggering landslides that interrupted subsistence farms. Natural disasters also cause crisis situations that make it difficult to reach people who are most affected (Gottesdiener, 2021). In times of disasters, there is limited access to potable water, the rate of water-borne diarrheal diseases increases, and the risk for malnutrition also appreciates.

## **Politics**

Politically, Haiti is governed by both a democratically elected head of State (the President) and an appointed head of Government (Prime Minister). Although the country practices a democratic system of governance, this system has been plagued by several coup d'etats, political upheavals and election conflicts (Gender Equality Observatory., n.d.). There have also been several allegations of corruption among the political class. On July 1 2021, the United Nations Security Council issued a statement expressing "deep concern regarding deteriorating political, security and humanitarian conditions in Haiti." (Wamsley, 2021)

The political instability has hampered foreign assistance in Haiti, which exacerbated the food crisis. As Haiti declared a state of emergency in 2021, many NGOs were no longer able to provide vital services such as malnutrition treatment and other food security activities. The country's turmoil has led families to reduce both the quality and quantity of food they are consuming, meaning children have even more difficulty accessing appropriate diets. In addition, forced displacement due to the political unrest made it even more difficult for some of the estimated 217,000 Haitian children suffering from severe and moderate acute malnutrition to receive proper treatment (Welsh, 2021).

## **Economy**

Haiti is a free market economy with low labor costs and tariff-free access to the US for many of its exports. Two-fifths of all Haitians depend on the agricultural sector, mainly small-scale subsistence farming, which remains vulnerable to damage from frequent natural disasters (Moody's Analytics., n.d.). Most people in Haiti work in the informal economy. Informal economy is the diversified set of economic activities, enterprises, jobs, and workers that are not taxed or monitored by the government (Aspilaire, R., 2014). Informal workers are vulnerable to food insecurities because their jobs are low paid and not protected by the state. Poverty, corruption, vulnerability to natural disasters, and low levels of education for much of the population represent some of the most serious impediments to Haiti's economic growth. Remittances are the primary source of foreign exchange, equivalent to more than a quarter of GDP, and nearly double the combined value of Haitian exports and foreign direct investment (Indexmundi., 2021).

Currently the poorest country in the Western Hemisphere, with close to 60% of the population living below the national poverty line, Haiti's GDP growth rose to 5.5% in 2011 as the Haitian economy began recovering from the devastating January 2010 earthquake that destroyed much of its capital city, Port-au-Prince, and neighboring areas. However, growth slowed to below 2% in 2015 and 2016 as political uncertainty, drought conditions, decreasing foreign aid, and the depreciation of the national currency took a toll on investment and economic growth (World Factbook., n.d.).

Investment in Haiti is hampered by the difficulty of doing business and weak infrastructure. The access to electricity and internet is limited, with fewer than 1% of Haitians having mobile internet. Haiti's outstanding external debt was canceled by donor countries following the 2010 earthquake, but has since risen to \$2.6 billion as of December 2017, the majority of which is owed to Venezuela. Although the government has increased its revenue collection, it continues to rely on formal international economic assistance for fiscal sustainability, with over 20% of its annual budget coming from foreign aid or direct budget support (Indexmundi., n.d.).

### Poverty

In 2020, Haiti had a GDP per capita of US\$2,925, the lowest in the Latin America and the Caribbean (LAC) Region and less than a fifth of the LAC average of US\$15,092. On the UN's Human Development Index, Haiti ranked 170 out of 189 countries in 2020 (World Bank, 2021).

The Covid-19 pandemic has exacerbated an already weak economy, plagued by social turmoil and political instability. Even before the pandemic, the economy was contracting and facing significant fiscal imbalances. Following a contraction of 1.7 percent in 2019, GDP contracted by an estimated 3.8 percent in 2020 (World Bank, 2021).

Past marginal gains in poverty reduction have been undone by a succession of crises, the Covid-19 pandemic, the assassination of the President, Jovenel Moïse, and the August 2021 earthquake being the most recent ones. Current estimates forecast a poverty rate of nearly 60 percent in 2020, compared to the last official national estimate of 58.5 percent in 2012. About two thirds of the poor live in rural areas. The welfare gap between urban and rural areas is largely due to adverse conditions for agricultural production. Haiti is also among the countries with the greatest inequity in the region (World Bank, 2021). The richest 20 percent of its population holds more than 64 percent of its total wealth, while the poorest 20 percent hold hardly 1 percent. The high level of poverty prevents most Haitians from affording sufficient food resources, leading to malnutrition (World Bank, 2021).

## **Agriculture**

Agriculture is the largest sector of the Haitian economy, but it is low in productivity, employing roughly two-thirds of the labor force but accounting for only about one-fourth of the gross domestic product (GDP). Haiti's soils and fishing zones are threatened. Farms in Haiti are small – averaging less than 1 hectare – and increasing population density puts pressure on farm size (Encyclopædia Britannica, inc., n.d.). Although only one-fifth of the land is considered suitable for agriculture, more than two-fifths is under cultivation. Major problems include soil erosion (particularly on mountain slopes, which are seldom terraced), recurrent drought, and an absence of irrigation).

Many farmers concentrate on subsistence crops, including cassava (manioc), plantains and bananas, corn (maize), yams and sweet potatoes, and rice. Some foodstuffs are sold in rural markets and along roads. A mild arabica coffee is Haiti's main cash crop. Haitian farmers sell it through a system of intermediaries, speculators, and merchant houses. Sugarcane is the second major cash crop. However, since the late 1970s Haiti has been a net importer of sugar since the late 1970s (Encyclopædia Britannica, inc., n.d.).

Deforestation in Haiti is a serious problem that began with a high need for fuel for processing sugarcane during the French colonial period and continues to the present day with an intensified demand for charcoal for fuel in Port-au-Prince and other urban areas (Encyclopædia Britannica, inc., n.d.). Political instability and poor funding have been serious obstacles to efforts to reduce dependency on forests for fuel. A number of large-scale reforestation projects have been planned, but they have been postponed because of social and political unrest and the urgent need to fund other infrastructure projects. Today only a small fraction of Haiti's land is forested.

Haiti is heavily dependent on food imports. 80 percent of rice, the country's major food source, is imported, thus creating a large dependence on foreign exchange. Rice consumption and a dependence on rice imports have increased considerably since the 1980s, when Haiti dramatically reduced its tariffs on imported rice (Cochrane et al., 2016). The high dependency on international markets makes the country vulnerable to international price shocks and thus food insecurity.

### Impact of natural disasters

Due to its location in the Caribbean basin, Haiti's agricultural sector is exposed to hurricane and tropical storms. In addition, the deterioration of the environment has contributed to increased droughts and floods (Cohen & Singh, 2014). The very low level of public and private investment in agricultural infrastructure makes it virtually impossible to put in place strategies that would prevent or help to minimize the risks or consequences of a natural disaster (World Bank Group, 2013). For example, lack of watershed protection and deficiencies in irrigation are major causes of floods and droughts. Finally, the weak fiscal position of the Government restricts the funding for disaster response and preparedness.

## **Health and Healthcare system**

Haiti's death rate is high, 8.448 per 1000 people compared to 7.524 globally in 2019 (World Bank, 2021). It is mainly because of the prevalence of infectious and parasitic diseases, diseases of the circulatory system, and conditions associated with malnutrition. Moreover, Haiti has a higher incidence of HIV infection and AIDS and a higher infant mortality rate than any other country in the Western Hemisphere (Encyclopædia Britannica, inc., n.d.). In 2021, the infant mortality rate for Haiti was 50.509 deaths per 1,000 live births. The life expectancy for Haiti was 64.40 years (The World Bank | Data, n.d.). Roughly three-fourths of Haitian households lack running water, and unsafe water—along with inadequate housing and unsanitary living conditions—contributes to the high incidence of infectious diseases. The highest rates of cholera in the Western Hemisphere are in Haiti. The cholera epidemic entered Haiti's rivers in 2010 which infected 800,000 people and killed 10,000 (Alexander, 2020).

### Healthcare system

There is a chronic shortage of health care personnel, and hospitals lack resources, a situation that became readily apparent after the January 2010 earthquake. Low government funding causes low public investment in healthcare in Haiti. The World Bank suggests the government should invest in preventing diseases rather than creating more hospital buildings (2020). Unfortunately, the Haitian government has largely decreased its investment in healthcare and in 2017, only 4.4% of Haiti's budget was spent on public health. Natural disasters have also impacted the healthcare system. The 2010 earthquake has destroyed 60% of the healthcare infrastructure in Haiti (Alexander, 2020).

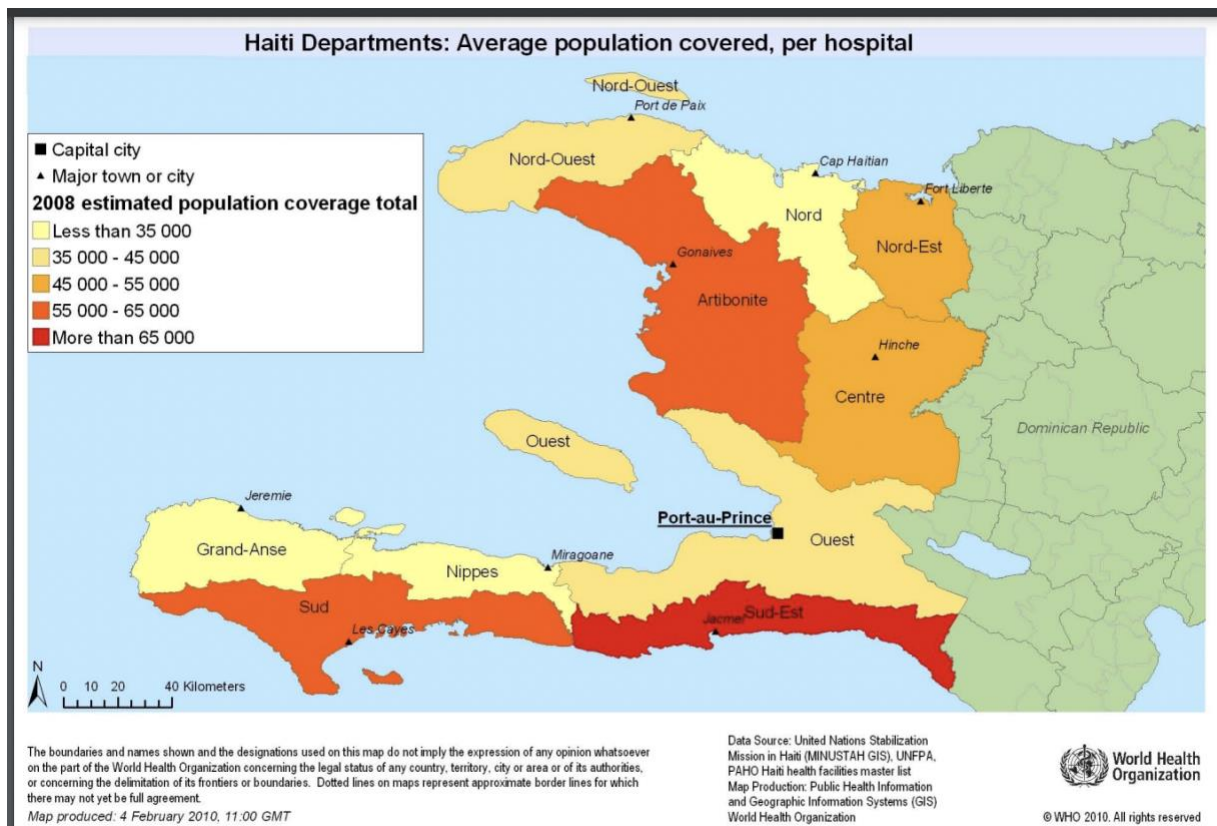


Figure: Average population covered per hospital in Haiti

Source: World Health Organization

### Covid-19 Pandemic

The poorest country in the Americas has battled the pandemic against a backdrop of scant medical resources and lack of vaccines. Covid-19 was first seen in Haiti in March 2020. Since then, the number of cases has risen steadily to 28,030 as of January 19, 2022. So far, 780 covid-related deaths have been recorded in Haiti (World Health Organization, n.d.). Although the relationship between Covid-19 and malnutrition in Haiti may be indirect, such a relationship cannot be denied. At the height of the pandemic in Haiti, the uptake of vaccination against common vaccine-preventable childhood diseases experienced a 28% decline because mothers were afraid of exposing their children and themselves to the virus at the hospital (Nuzhath et al., 2021). The low vaccination rate resulted in an increase in the number of diphtheria and measles cases. These infectious diseases put children at risk for malnutrition by increasing their metabolic demands and decreasing their appetite/ability to take in foods.

Moreover, the pandemic resulted in most families losing their source of income. Thus, the ability of most families to afford nutritious meals for their children greatly diminished during the pandemic and hence the increased risk for malnutrition. The Covid-19 pandemic also resulted in the withdrawal of some hospital services including nutrition-related health services. This impacted early detection of cases of malnutrition and the treatment of the same in the country.



Additionally, the Covid-19 pandemic and its related restrictions disrupted the distribution of food resources, spiraling food prices. On average, a working person in Haiti has to spend about 35 percent of their income for a meal (UN World Food Programme, n.d.). In addition, due to Haiti's dependence on food imports, the restriction of global trade further catalyzed the price increase. Amidst the difficulties to access food, at least 86,000 children are at risk of developing “severe acute” child malnutrition in Haiti in 2021 (UNICEF, 2021).

## 6. Gang violence

Gangs have become a scourge in the capital city of Port-au-Prince. A 2021 U.N. report indicated 5,000 people had been displaced by gang violence by the middle of the year (United Nations., 2021). The violence has left several people murdered, or injured, as rival gangs battle to exert control over populous areas. Hundreds of homes and small businesses have also been burned. Gangs make it difficult for humanitarian agencies to operate in times of crisis. In gang-dominated communities, the poor and less-powerful are deprived of food and are unable to access healthcare services (Coto & Sanon, 2021).

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