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# Covid-19 Bulletin

## Assessing community vulnerability to Covid-19 in West Africa

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*The pandemic is likely to have disparate effects in different areas due to underlying characteristics that shape patterns of vulnerability.*

Limited resources will require that responses to the pandemic prioritize the most vulnerable communities where the effects are likely to be devastating. AKADEMIYA2063 is using its eAtlas platform with data from a variety of sources to pinpoint locations across countries where chronic vulnerability renders the population uniquely susceptible to the effects of the COVID-19 outbreak. For instance, communities at the lower end of indicators on food security and nutrition, health infrastructure and access, and poverty, among others, tend to have high levels of chronic vulnerability and are thus prone to be hit harder by health shocks.

We define vulnerability as the likelihood of exposure to negative food security effects resulting from the COVID-19 crisis. We base our classification of communities upon several indicators representing different dimensions of vulnerability.

For that purpose, we create a composite indicator that includes indicators on nutrition and food security, health infrastructure and access, and population density to measure and map vulnerability across local communities. The overlaying of multiple indicators provides a more nuanced picture of vulnerability at community level and allows identification of areas that would be missed if only a few factors were considered. For each indicator, we classify locations as “much less”, “less”, “more”, or “much more” vulnerable compared to the regional average. As vulnerability is defined relative to the regional average, it is important to note that locations classified as “less vulnerable” and “much less vulnerable” may still be likely to suffer adverse food security effects, but are less exposed compared to other areas in the region. In this bulletin, we examine existing factors in eight West African

## GETTING AHEAD OF THE CURVE

The Covid-19 pandemic has disrupted lives across the globe in just a few months. And yet, there are no effective vaccine or treatment to contain its spread. A very likely scenario for African countries is a continued battle with the disease over the next year at least, with steady spread of infections to larger parts of countries, including into more remote areas. While we are dealing with the immediate and multifaceted effects, we need to also look ahead to bolster preparedness to tackle the crisis in likely future hot spots. An important part of country strategies and readiness in fighting the pandemic is therefore to anticipate where the pandemic is most likely to spread and, more critically, where there is least capacity to absorb the shock if and when it hits.

Crises like the current one often only bring to the fore the manifestation of long term, chronic vulnerability. Most communities that bear the brunt of the suffering from crises are communities that have been plagued by chronic threats to their livelihoods long before the shocks occur. These pre-existing conditions erode the communities' absorption capacity and magnify the impact of shocks. Early identification of such communities and a better understanding of the nature of their vulnerability, particularly with respect to specific shocks, in this case the Covid-19 pandemic, make it possible to craft response strategies long before the crisis hits.

In the current work stream of the AKADEMIYA2063 Covid-19 program, we rank communities across regions and countries against a range of key livelihood and threat indicators to determine the ones that are likely to suffer the most, should the pandemic reach them. The findings can help governments, non-state actor organizations and the development community to forge proactive responses to contain the propagation of the disease and mitigate its effects.

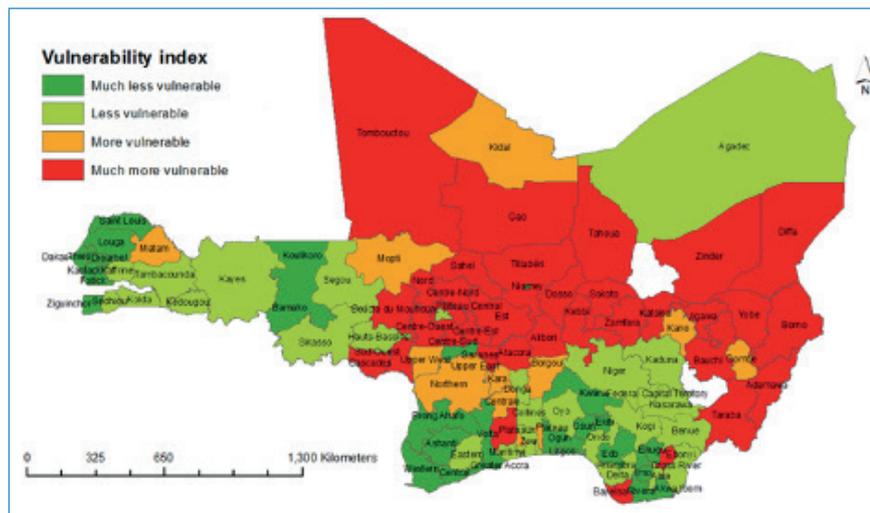
*Ousmane Badiane, Executive Chairperson*

countries that determine their levels of vulnerability to negative impacts of the COVID-19 crisis on food security and livelihoods in general.

### Patterns of vulnerability in West Africa

As indicated above, the composite indicator used in measuring and classifying the degree of vulnerability, as illustrated in the Figure, is based on sub-indicators in areas of nutri-

#### Geographic distribution of community vulnerability to Covid-19



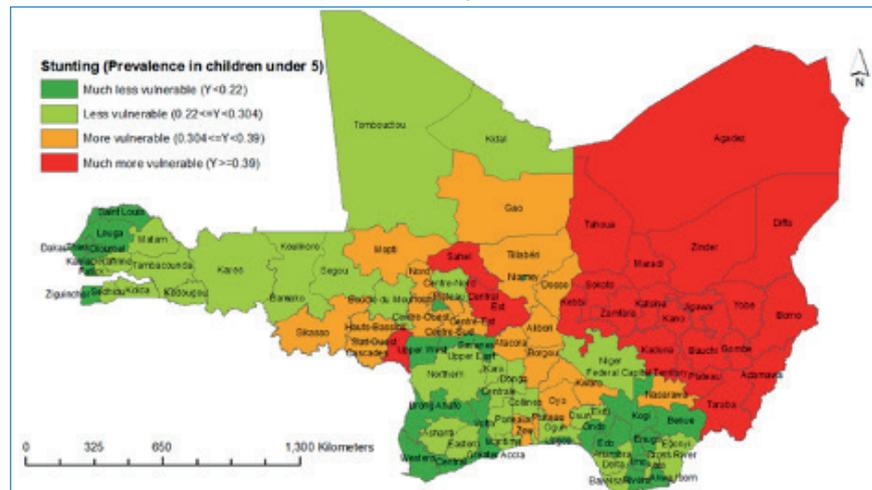
tion and food security, health infrastructure and access, and population density.<sup>1</sup> Food security indicators are highly relevant because areas already suffering from chronic food insecurity are the most vulnerable to damage from shocks. Limited access to health care, while it can contribute to food insecurity through effects on morbidity and mortality, also indicates higher vulnerability to the health shocks such as the COVID-19 pandemic. Population density, furthermore, suggests higher vulnerability to the spread of COVID-19 due to challenges in maintaining social distance. Rather than measuring population density based on the entire extent of given geographic area, we calculate the average density with respect to the inhabited area assessed using remote sensing. This yields a more accurate estimate of density and a better measure of the ability to practice social distancing.

<sup>1</sup> Locations are categorized relative to the eight-country West Africa average for each indicator.

The estimated values of the composite indicator suggest that vulnerability in West Africa is highest in parts of the Sahel, including northern Mali, most of Burkina Faso and Niger, and northern Nigeria. The least vulnerable areas are in western Senegal, central Mali, and southern Ghana and Nigeria, with pockets of higher vulnerability in these areas. In Senegal, Matam in the North East is the most vulnerable location. In Mali, the Tom-

bouctou region is the most vulnerable. Vulnerability in this area is significantly above the West Africa average. While nearly all regions of Burkina Faso and Niger are classified as much more vulnerable than the regional average, Zinder in Niger and Plateau Central in Burkina Faso emerge as the most vulnerable regions of these countries. In contrast, the Northern region, Savanes region, and Alibori department are the most vulnerable areas in Ghana, Togo and Benin,

#### Nutrition status and Covid-19 vulnerability



respectively. Seven Nigerian states, mostly in the north—Bauchi, Bayelsa, Jigawa, Katsina, Sokoto, Taraba, and Zamfara—show the highest levels of vulnerability in that country, although five other states are also classified as much more vulnerable than the regional average.

### Nutrition and food security indicators

While the composite indicator helps highlight areas with multiple forms of vulnerability, it is important to look further at individual indicators to better understand the profile of a given community. Examination of individual indicators provides further insight into the drivers and complexity of overall vulnerability. While some areas are classified as highly vulnerable on a number of indicators, other show sharply differing patterns across indicators. For example, the Agadez region of Niger is classified as much more vulnerable than the regional average for several indicators, but less or much less vulnerable for others.

Existing levels of malnutrition and food insecurity, represented by the prevalence of child stunting and average household food consumption expenditure per adult equivalent, provide a strong indication of vulnerability to severe impacts of future crises. Households suffering from food insecurity and malnutrition are likely to have fewer resources to cushion themselves from the effects of the COVID-19 pandemic.

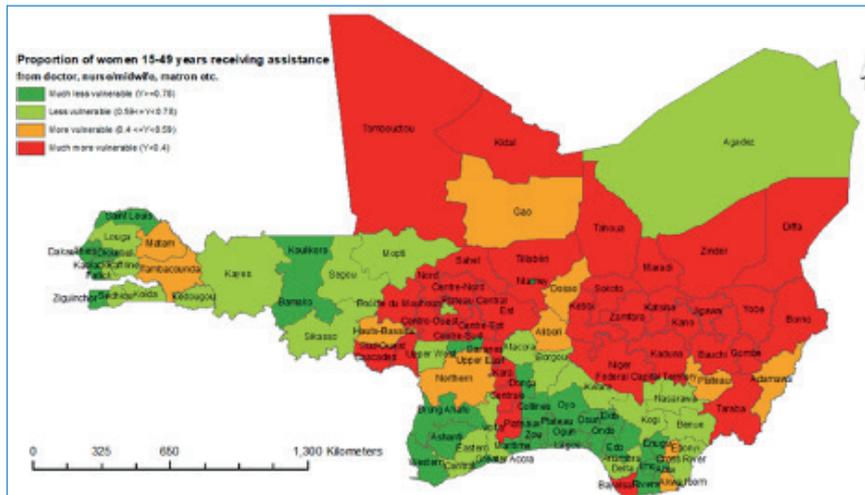
The highest child stunting rates among the West African countries examined are concentrated in Niger and northern Nigeria as well as several regions of Burkina Faso. Stunting rates are comparatively low in western Senegal and parts of Ghana and southern Nigeria. However, even in these areas, stunting exceeds the Ma-

### Health infrastructure and access indicators

We measure health infrastructure and access to healthcare with the help of two indicators: (i) the percentage of women aged 15-49 receiving assistance from a doctor, nurse, midwife or similar medical professional **during childbirth**, and

The areas with the lowest proportions of women reporting receiving assistance from a doctor, nurse, or other medical professional include northern Mali, northern Nigeria, and most of Burkina Faso, Niger, and Togo. Aside from Bayelsa state in Nigeria and several regions of Togo, access to medical assistance appears to be better on average in coastal West Africa than in the Sahel. Meanwhile, the region of Agadez in Niger is the only example of a northern, arid location with relatively high access to assistance. The lowest shares of women receiving assistance from medical professionals, under 10 percent, are observed in the Sahel and Nord regions of Burkina Faso and in Nigeria's Kebbi state. In contrast, 19 areas across the 8 countries show rates of women receiving assistance of above 90 percent, with the highest—98, 98 and 100 percent respectively—in the Oémé department of Benin, the Bamako region of Mali, and Imo state of Nigeria.

### Access to health services and Covid-19 vulnerability



Note: USD PPP – United States dollars, purchasing power parity

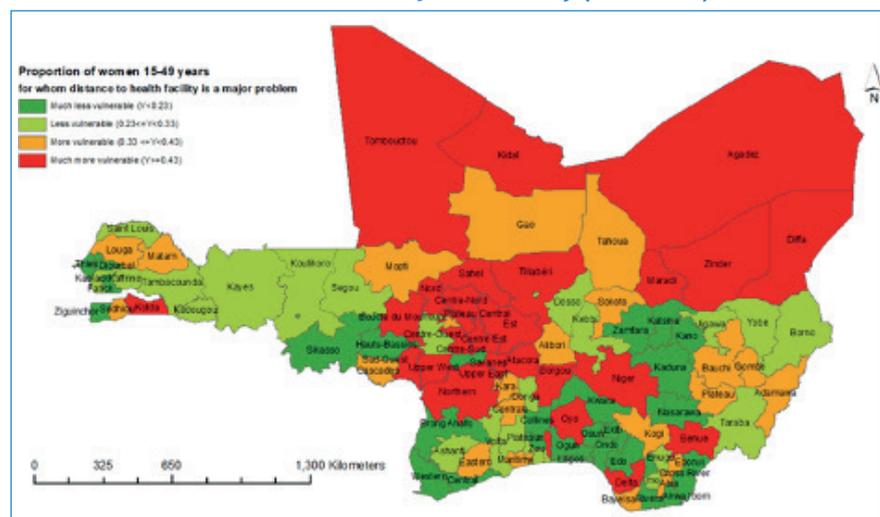
labo Declaration target for 2025 of 10 percent. The lowest stunting rates observed are 11 percent in the Savanes region of Togo, 12 percent in the Dakar region of Senegal, and 13 percent in the Thiès region of Senegal and the Greater Accra region of Ghana. The highest rates, of over 60 percent, are in the Kebbi, Jigawa, and Katsina states of northern Nigeria.

In contrast, the areas with the highest food security vulnerability in terms of per capita food expenditures are northern and western Mali, eastern and central Burkina Faso, northern Ghana, southern Niger, and Togo and Benin. Notably, the Kédougou region of Senegal and Nasarawa state in Nigeria show very low average food expenditures, despite higher expenditures in neighboring regions. Conversely, expenditures are significantly higher in the Sahel region of Burkina Faso and the Agadez region of Niger than in neighboring areas. On average, Nigeria and Senegal have the highest food expenditures while Benin and Togo show the lowest.

(ii) the percentage of women aged 15-49 reporting that the distance to a health facility poses major problems. These indicators provide a proxy of access to healthcare for the entire population. Areas with more limited access are likely to be more vulnerable to COVID-19 due to unavailability of treatment in case of infection, and possibly also due to complications from other health issues not previously addressed.

Patterns of access to health facilities show some similarities with those of access to care by medical professionals. Northern Mali and most of Burkina Faso and Niger are much more vulnerable than the regional average for both indicators. However, areas of comparatively low access in terms of distance to health facilities are more dispersed throughout the region than was observed with regard to assistance from health

### Access to health services and Covid-19 vulnerability (continued)



professionals. Each of the countries examined has at least one location that is much more vulnerable in terms of distance than the regional average. Most countries, with the exceptions of Niger and Togo, also have at least one area that is much less vulnerable than the regional average, indicating significantly varying levels of health facility access within countries. Fewer than 10 percent of surveyed women reported that distance to a health facility was a major problem in Ondo, Nasarawa, and Osun states of Nigeria and in the Dakar region of Senegal; in contrast, at least 50 percent of women reported distance to be a problem in 14 areas of the 8 countries. The highest levels, over 65 percent, were in the Kidal region of

Mali and the Sud-Ouest and Centre-Sud regions of Burkina Faso.

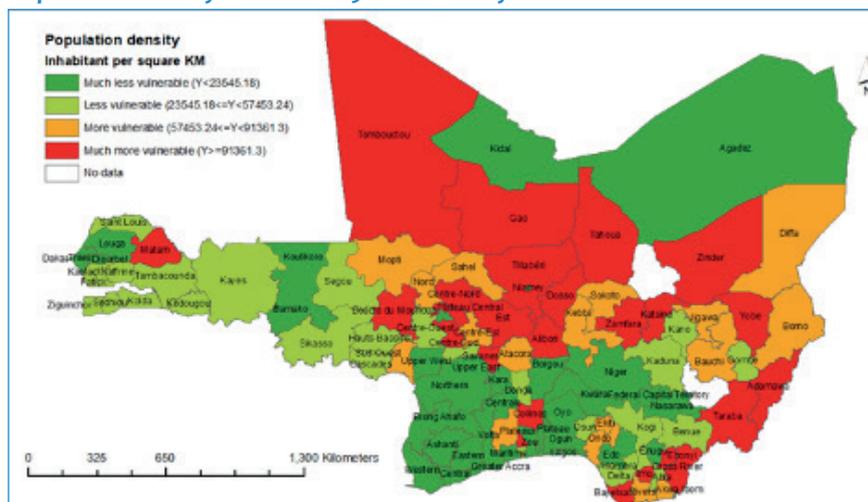
### Population density

The fifth indicator used to calculate overall vulnerability to adverse food security effects of COVID-19 is population density in inhabited areas. People living and working in close proximity with others are likely to have more difficulty maintaining social distancing required to reduce COVID-19 transmission. We see a high degree of variation within countries, with every country having at least one area that is much less vulnerable than the West African average, and every country except for Ghana having at least one area that is much more vulnerable.

Highly vulnerable areas are especially concentrated in Mali, Burkina Faso, Niger and Nigeria, although other areas of these countries show much lower population density. Ghana is the least vulnerable country in West Africa in terms of density, and density also tends to be low in much of Senegal, western Mali, and parts of Benin, Togo and Nigeria.

The purpose of the bulletin is to highlight the vulnerability of African communities to COVID-19 based on existing health, food and nutrition security and infrastructure conditions. Evidence suggests that communities with already concerning levels of food and nutrition security, health infrastructure and access, and poverty, among others, tend to have high levels of chronic vulnerability. Therefore, responses should prioritize the most vulnerable communities where the effects are likely to be devastating. In this bulletin, we examined existing factors in eight West African countries that determine their levels of vulnerability to negative impacts of the COVID-19 crisis. Overall, most of vulnerable areas (hot spots) appear in Northern Mali, northern Nigeria, Burkina Faso and Niger.

### Population density and Covid-19 vulnerability



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