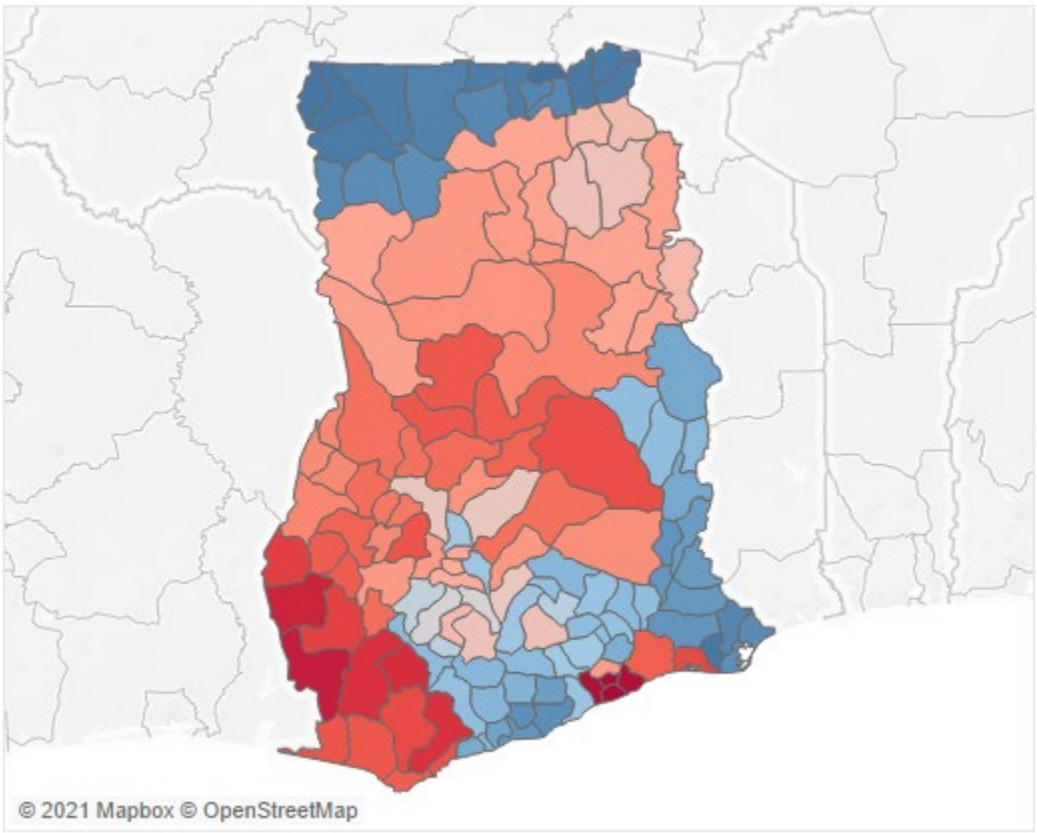
ASSESSING THE RISK OF COVID-19 IN GHANA

As COVID-19 vaccines are becoming available, governments will need to assess the number and location of the most vulnerable people within their populations. However, problematically, tracking data for most low- and middle-income countries are only available at the national level. To support the COVID-19 relief effort, the Gender, Climate Change, and Nutrition Integration Initiative (GCAN) was commissioned to develop a subnational dataset of key COVID-19 risk indicators and potential risk hotspots.

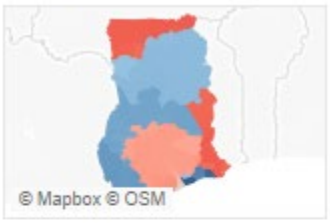
Based on patient data compiled and analyzed worldwide, the science community's consensus is that key COVID-19 risk factors include age, sex, and obesity. Being old, male, and obese increases both vulnerability to infection and the likelihood of negative outcomes. Based on each indicator's COVID-19 death hazard ratio, a composite index for the second-level subnational administrative units was constructed using exploratory factor analysis (a statistical technique that reduces the number of variables). The results of the subnational risk index (map a) and the risk indicators (maps b, c, and d) are presented visually below, resulting in hotspots (the redder colors) and cold spots (the bluer colors).

While age-related risks are high in Upper West and Upper East regions, sex- and obesity-related risks are high in Greater Accra, Western, (old) Brong-Ahafo, and Ashanti regions. Four municipal districts in Greater Accra (Accra, Tema, Ga West, and Ga East) have the highest risk index values, followed by Aowin-Suaman and Juabeso districts in Western Region.

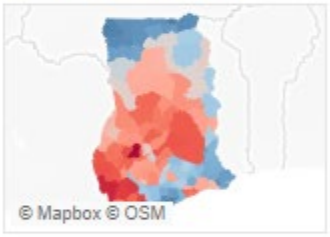
a. Risk index in Ghana



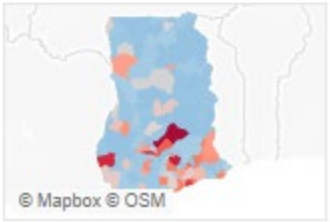
b. Age-related risk



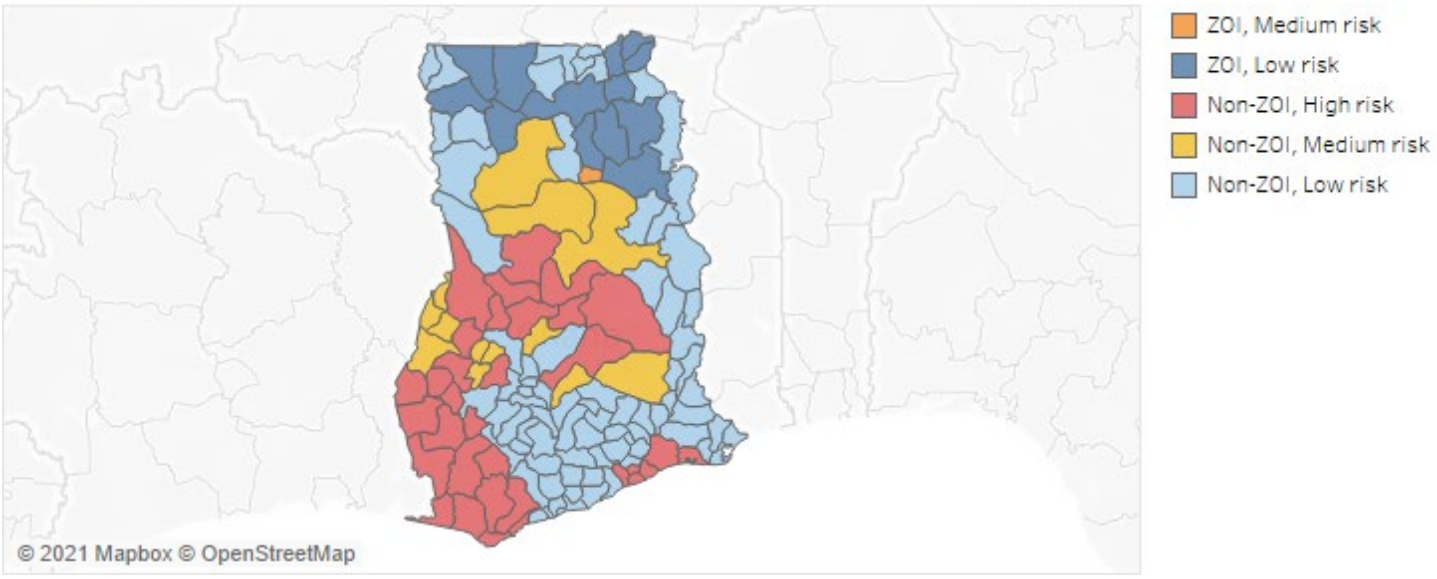
c. Sex-related risk



d. Obesity-related risk



e. Risk index classes



f. Distribution of adult population in each class of risks

The above figures categorize the risk index values into areas of low, medium, and high risk (map e) and visualize the number of adults (≥18 years old) in each category (figure f). ZOI indicates the zone of influence of the U.S. Government's Feed the Future program. Areas of high risk are located in Ashanti (Ahafo Ano South, Sekyere East Districts), Brong Ahafo (Asunafo North/South, Asutifi, Atebubu-Amantin, Kintampo North/South, Nkoranza, Pru, Sene, Sunyani, Tain, Techiman Districts), Greater Accra (Accra, Dangbe East/West, Ga East/West, Tema Districts), and Western Region (Ahanta West, Aowin-Suaman, Bia, Bibiani Anhwiaso Bekwai, Jomoro, Juabeso, Mpohor Wassa East, Nzema East, Sefwi Wiawso, Shama Ahanta East, Wasa Amenfi East/West, and Wassa West Districts). This spatial pattern of high risk areas reflects reported COVID-19 cases, which are highest in Greater Accra, followed by Ashanti, Western, Eastern, and Central Regions.[1] All high risk areas are outside of ZOI.

The total number of adults in the high risk areas is about 6.5 million (34% of the country's total adult population), of which 42% (2.7 million) are located in rural areas. Given the relatively high estimated risk in rural areas, supporting interventions targeting agricultural laborers should be encouraged. Socially distanced farming practices promoted in other countries include collecting harvested grain at the farm gate to minimize farmers' travel to markets and use social networks to coordinate fieldwork on rotating days. Digital technologies are also being leveraged to support contactless transactions and the delivery of goods and produces. Recently published studies also underscore that, across low and middle income countries, rural areas have lower access to safe water for personal hygiene and healthcare facilities than urban areas. For personal hygiene in the household, only 37% of the rural population has access to basic handwashing facilities, including soap and water, versus 45% in urban areas.[2] Other notable vulnerabilities in rural areas are related to household structure. In Ghana, 22% more rural households live with elders than urban households. The higher share of larger, multi-generational rural households may render those areas vulnerable.

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[1] *Ghana COVID-19 Dashboard.* Ghana Health Service, 2021. https://www.ghanahealthservice.org/covid19. Accessed 9 February 2021.
[2] *WASH and COVID-19.* UNICEF, 2020. https://data.unicef.org/topic/water-and-sanitation/covid-19. Accessed 9 February 2021.