

Local Burden of Disease:

OUTBREAKS AND TRAVEL TIME



How access to healthcare affects preparedness

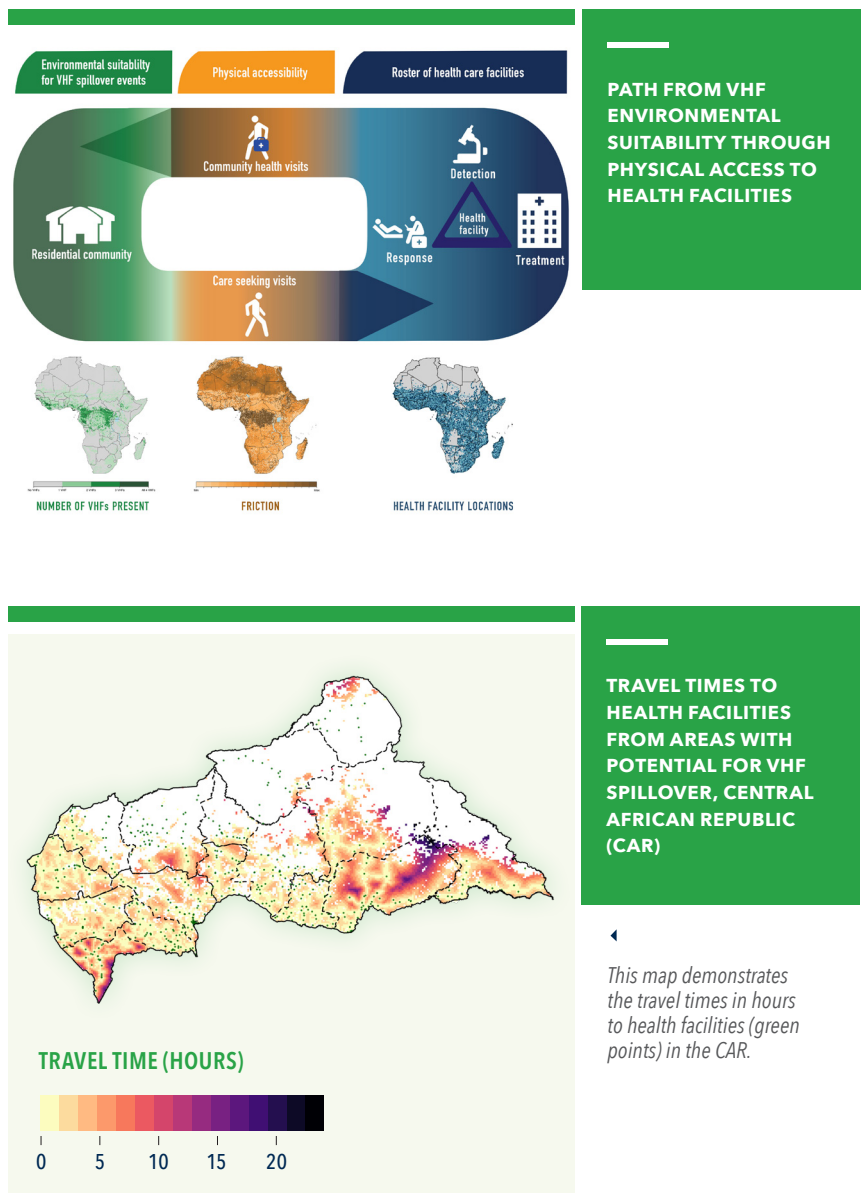
When examining the threat of viral hemorrhagic fevers (VHFs) like Ebola, studies and strategies need to account for differences within a country. Local outbreaks, if not detected and countered early, can quickly develop to and spread to other areas. Resources also need to be allocated to where they can help most. By analyzing the distance to health facilities in areas at risk of outbreaks of infectious diseases, the Institute for Health Metrics and Evaluation (IHME) has created a framework that shows how travel time can affect the spread of VHFs during an outbreak and how this information can help inform efforts to strengthen health systems.

When dealing with infectious diseases with high fatality rates such as Ebola or other VHFs, quick access to health facilities with capable staff, high-standards of laboratory testing and appropriate implementation of Infection Prevention and Control are important to people living in areas where VHFs are likely to both occur (environmental suitability) and spread to neighboring areas (spillover potential).

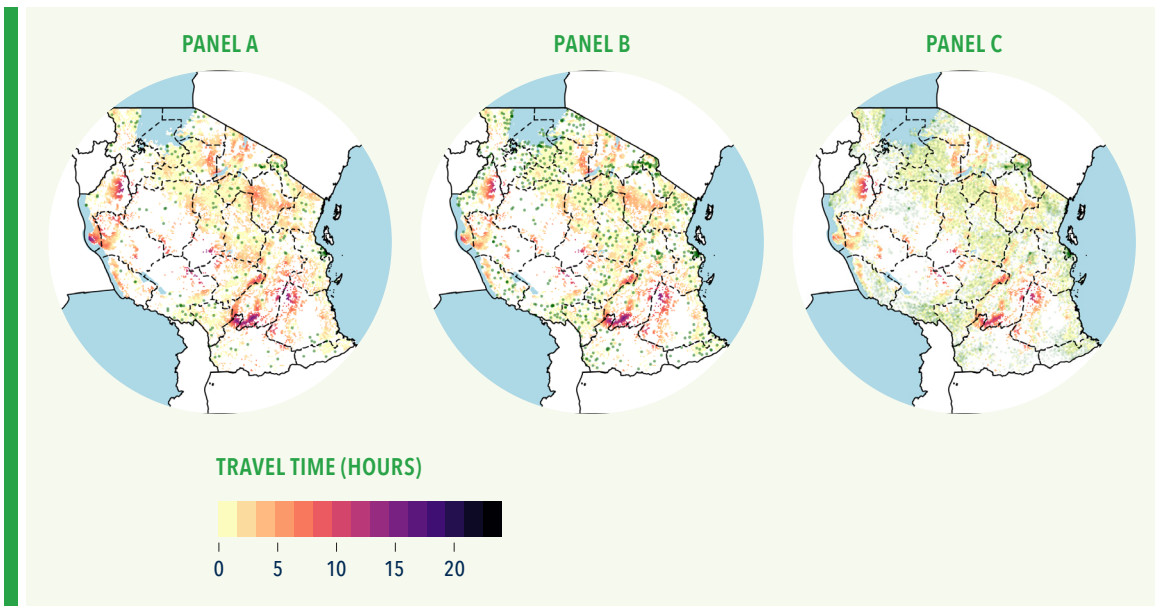
Mapping areas at risk

Using publically-available data, IHME researchers measured the time it takes to travel to the nearest health facility combined with our own mapping of where VHFs like Crimean-Congo hemorrhagic fever, Ebola, Lassa fever, and Marburg virus are likely to occur. By identifying areas at risk where travel time is especially high or low, we can show where additional resources would be most impactful in improving access to health facilities in the event of infection.

In locations with long travel times, such as the Mbomou region of the Central African Republic (CAR) it's important to focus on expanding the number of health facilities to ensure access for all. Conversely, in areas where travel times are short, such as around Bangui and neighboring prefectures, the country can instead focus on ensuring the health facilities in the area have the resources necessary to respond to any cases that arrive at a health facility for diagnosis and treatment.



TRAVEL TIMES TO TANZANIAN HEALTH FACILITIES FROM AREAS WITH POTENTIAL FOR VHF SPILLOVER BY FACILITY TYPE



Panel a) demonstrates the travel times in hours to hospitals (green points) in Tanzania, panel b) demonstrates the travel time in hours to a health center, and panel c) demonstrates the travel time in hours to a dispensary; areas in-country in white are those without VHF spillover potential.

Tailored national and regional analysis

The framework used in this study provides a means to systematically survey any country, such as in the Tanzania example above. It can complement current efforts to strengthen preparedness by providing bespoke evaluations relevant to National Action Plans for Health Security. IHME does this by offering a strong evidence base for policy decisions to help identify facilities close to spillover locations and remote communities at-risk who are less likely to receive high quality care promptly.

These evaluations, made with country provided health systems data combined with IHME estimates of environmental

suitability and other factors, can give a more comprehensive overview of your country's outbreak preparedness and provide insight into how it can be further improved.

While IHME's current analyses focus on VHFs in sub-Saharan Africa, these can be expanded to provide tailor-made data-driven insights into outbreak preparedness for many countries and infectious diseases so long as data and appropriate models are available. If you are interested in learning more or working with us to evaluate your country's pandemic preparedness, please contact GBDsec@uw.edu.

About IHME

The Institute for Health Metrics and Evaluation (IHME) is an independent global health research center at the University of Washington. It provides rigorous and comparable measurement of the world's health problems and evaluates strategies to address them. IHME is recognized as one of the leading health metrics organizations in the world. IHME makes its research freely available so that policymakers have the evidence they need to make informed decisions about how to allocate resources to best improve population health.

For more information,
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