Alliance Initiatives for Pandemic Preparedness

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Dept of Global Health External Advisory Board Meeting
November, 2020

UNIVERSITY of WASHINGTON

Recent Initiatives

- Outbreak vulnerability mapping
- UWARN/CREID Emerging Infectious Disease Research Network

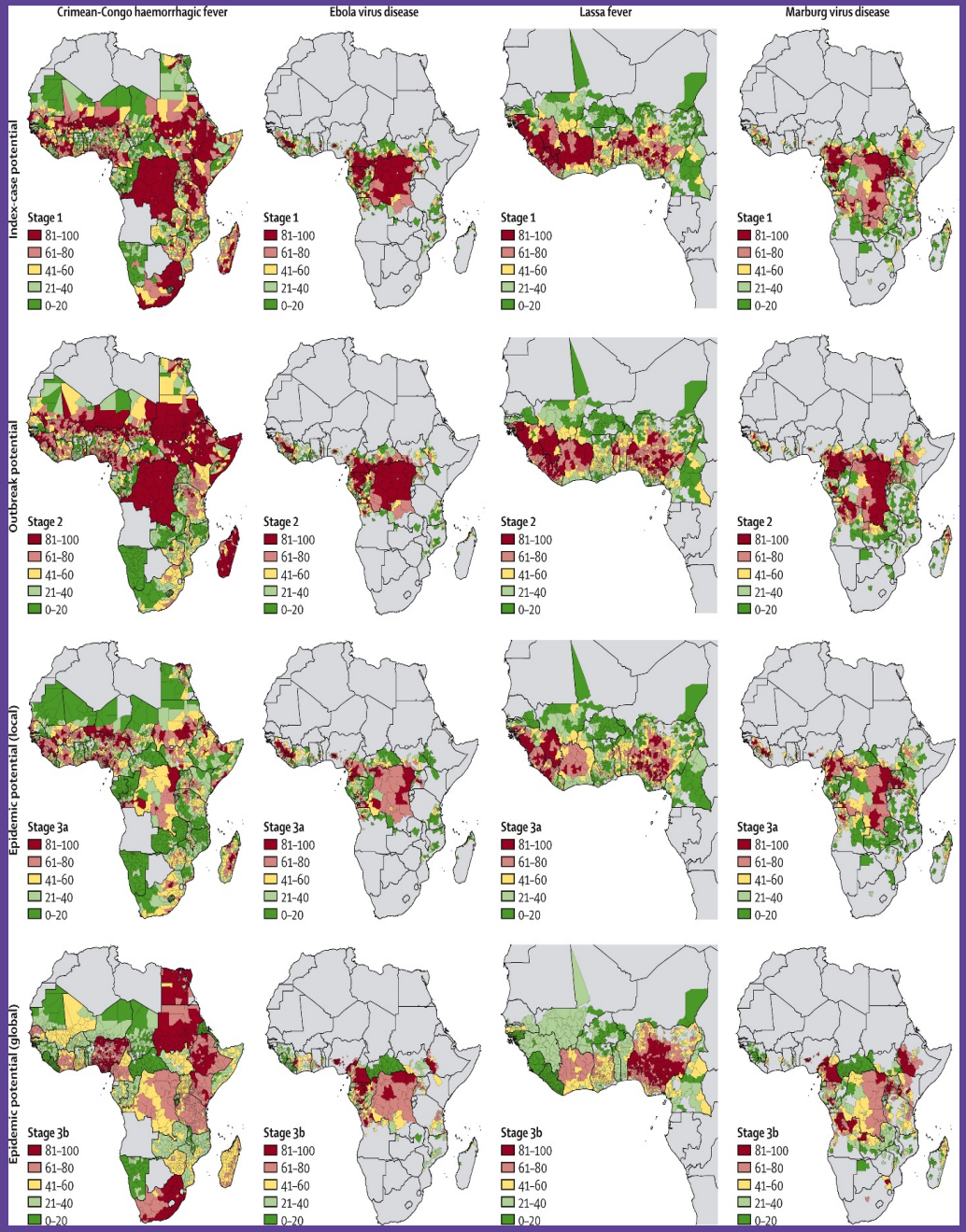
Potential "Value Added" of Initiatives

- Provide fine scale data across regions for pandemic preparedness, including environmental change
- Align cutting edge biomedical capacity with local pandemic response.
- Demonstrate value of integrated approach

Hemorrhagic Fever Vulnerability in Africa:

Single Cases (Stage 1)
Outbreaks (Stage 2)
Epidemics (Stage 3)

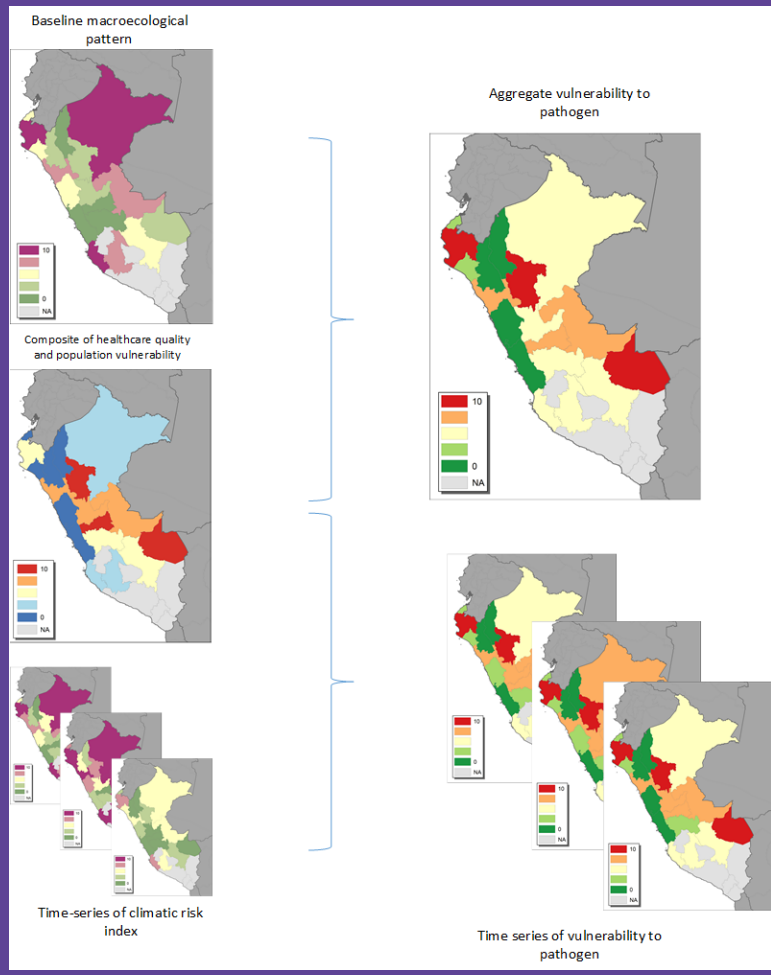
Pigott et al
Lancet 2017



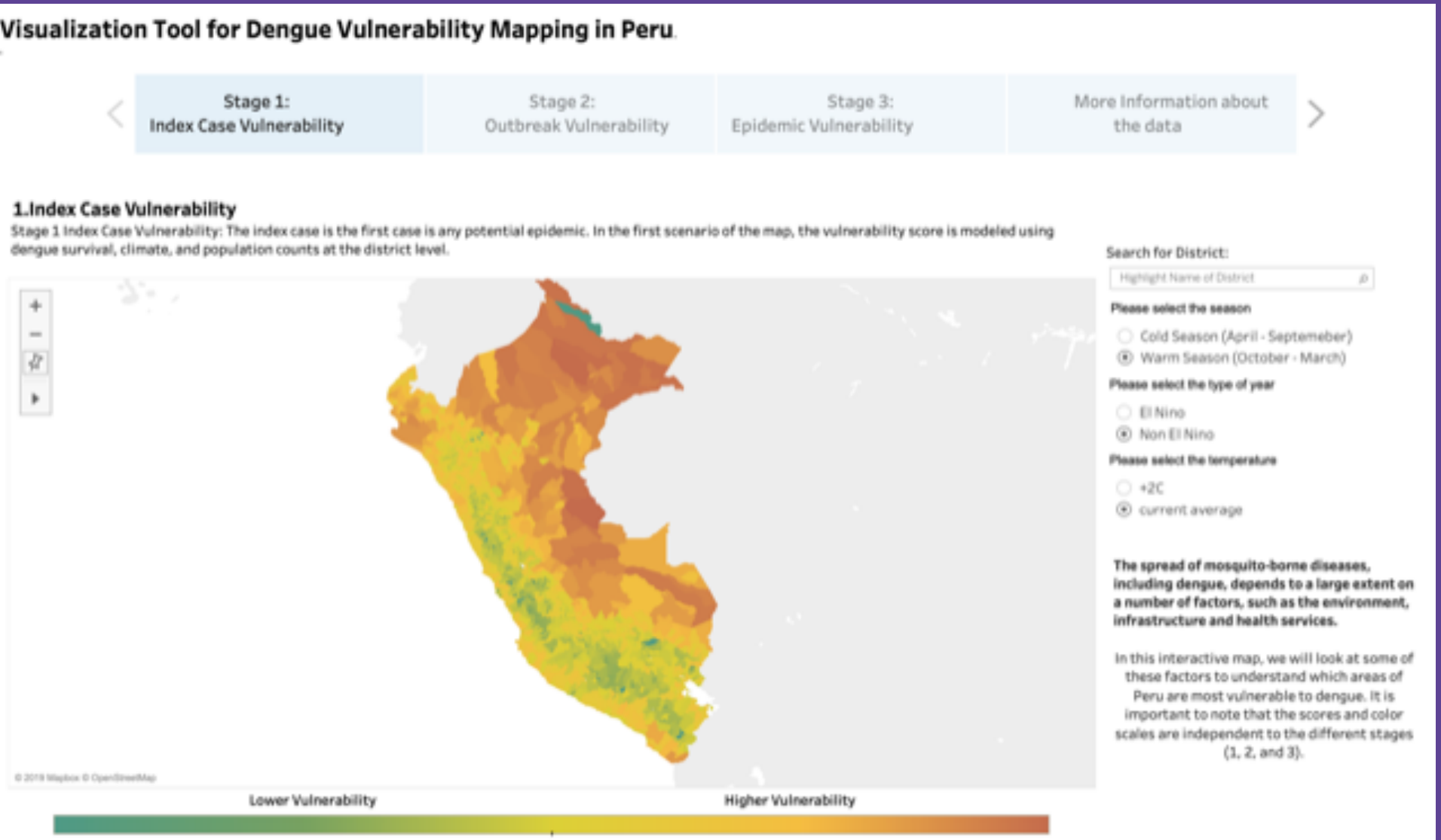
Peru Proof of Concept Project

Goals:

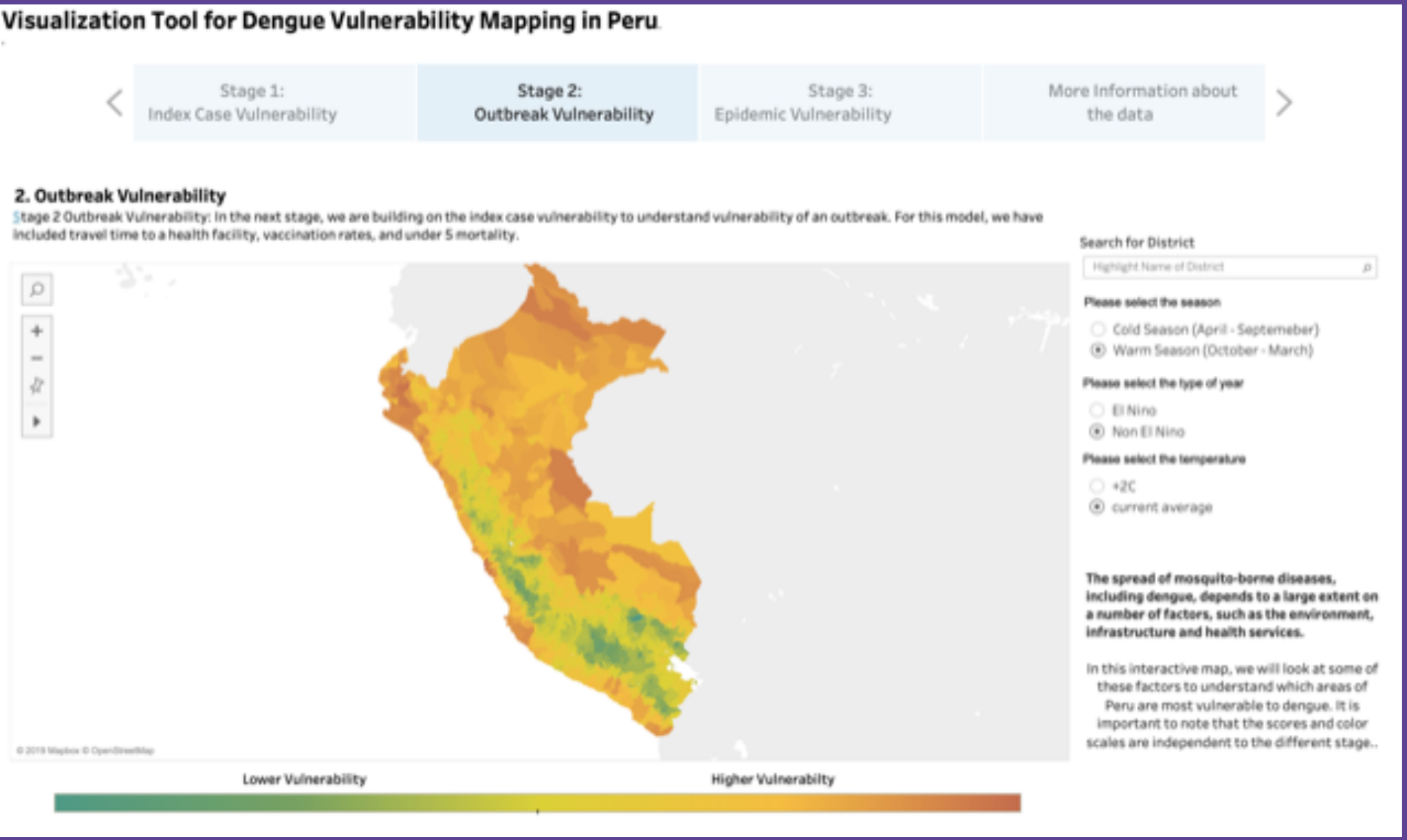
- Map vulnerability (stages 1,2,3) for dengue across the country at district level (N=1800)
- Include seasonal and climate change scenarios
- Test usability of visualizations for prioritization and other actions



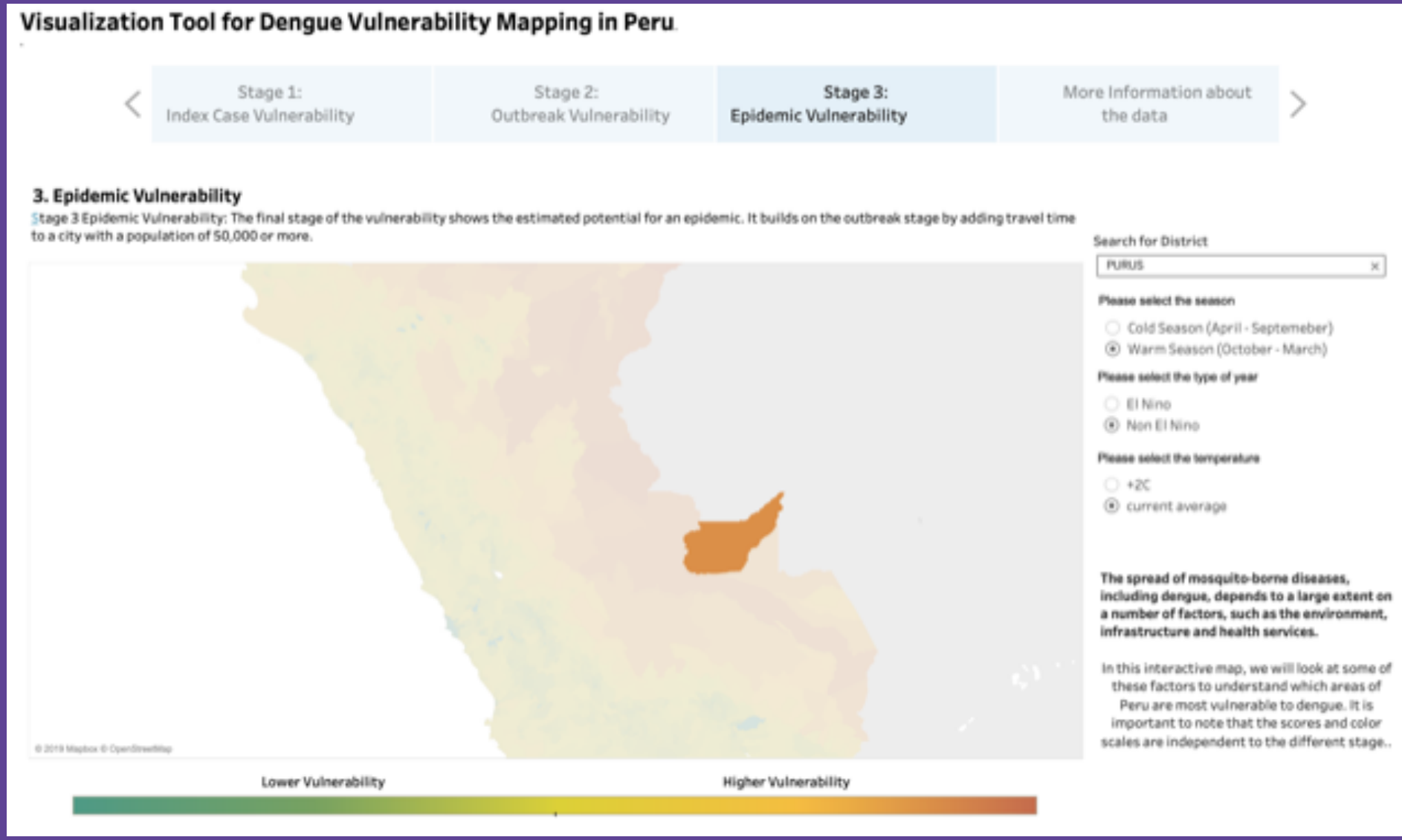
Single (Index) Case Vulnerability



Localized Outbreak Vulnerability



Widespread Epidemic Vulnerability



Usability testing with stakeholders

Focus groups

Results

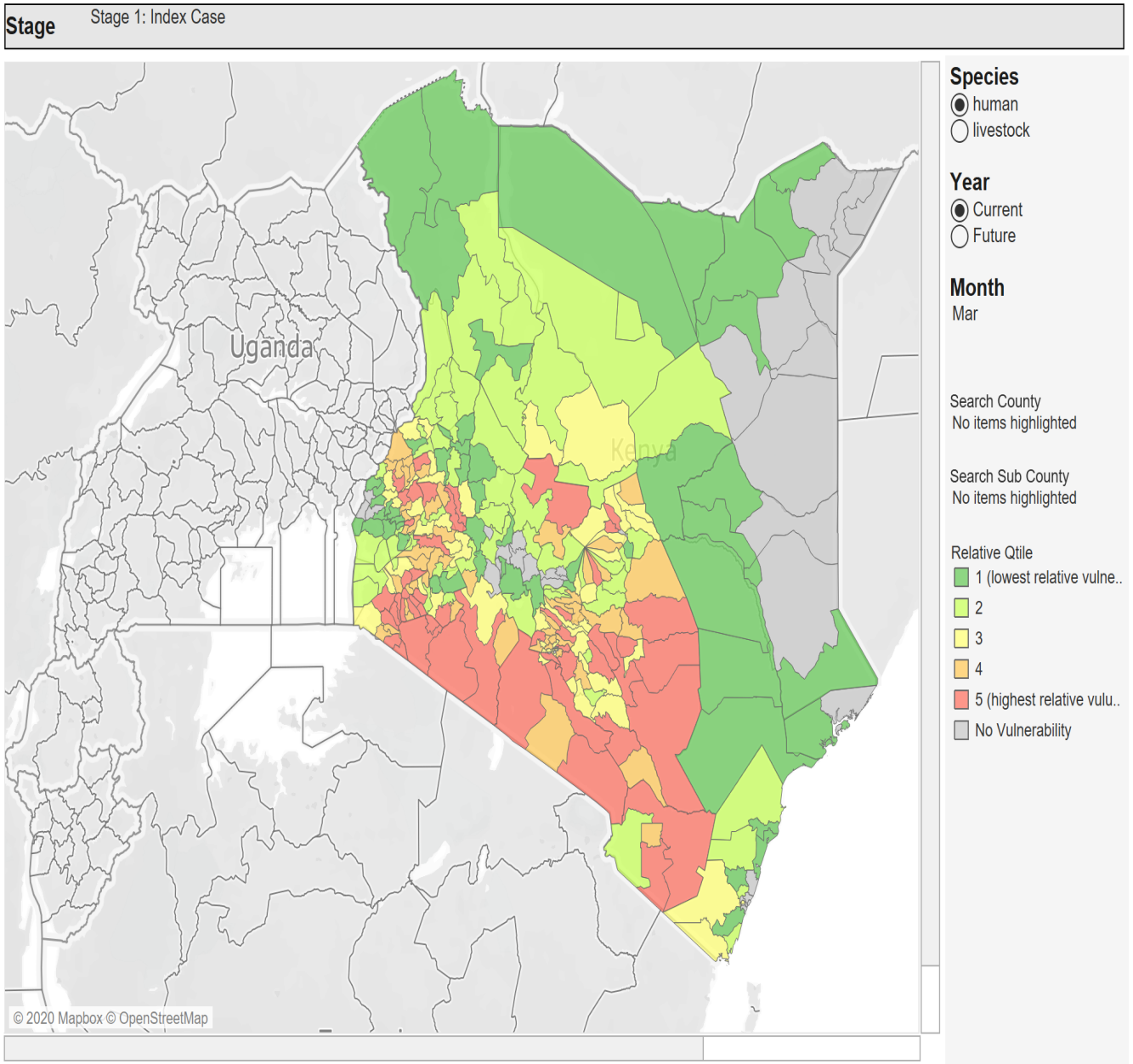
- Enthusiasm for mapping
- Interest in comparing model vs. real data (vector sampling, surveillance case reports)
- Interest in additional data sets to characterize health system resilience
- Interest from Ministry of finance
- Interest in transition to local server
- Interest in climate projections- longer time horizon

Kenya Vulnerability Mapping for RVF

ITECH Kenya

Stage 1: Vulnerability to INDEX CASE of RVF: March

Rift Valley Vulnerability in Kenya

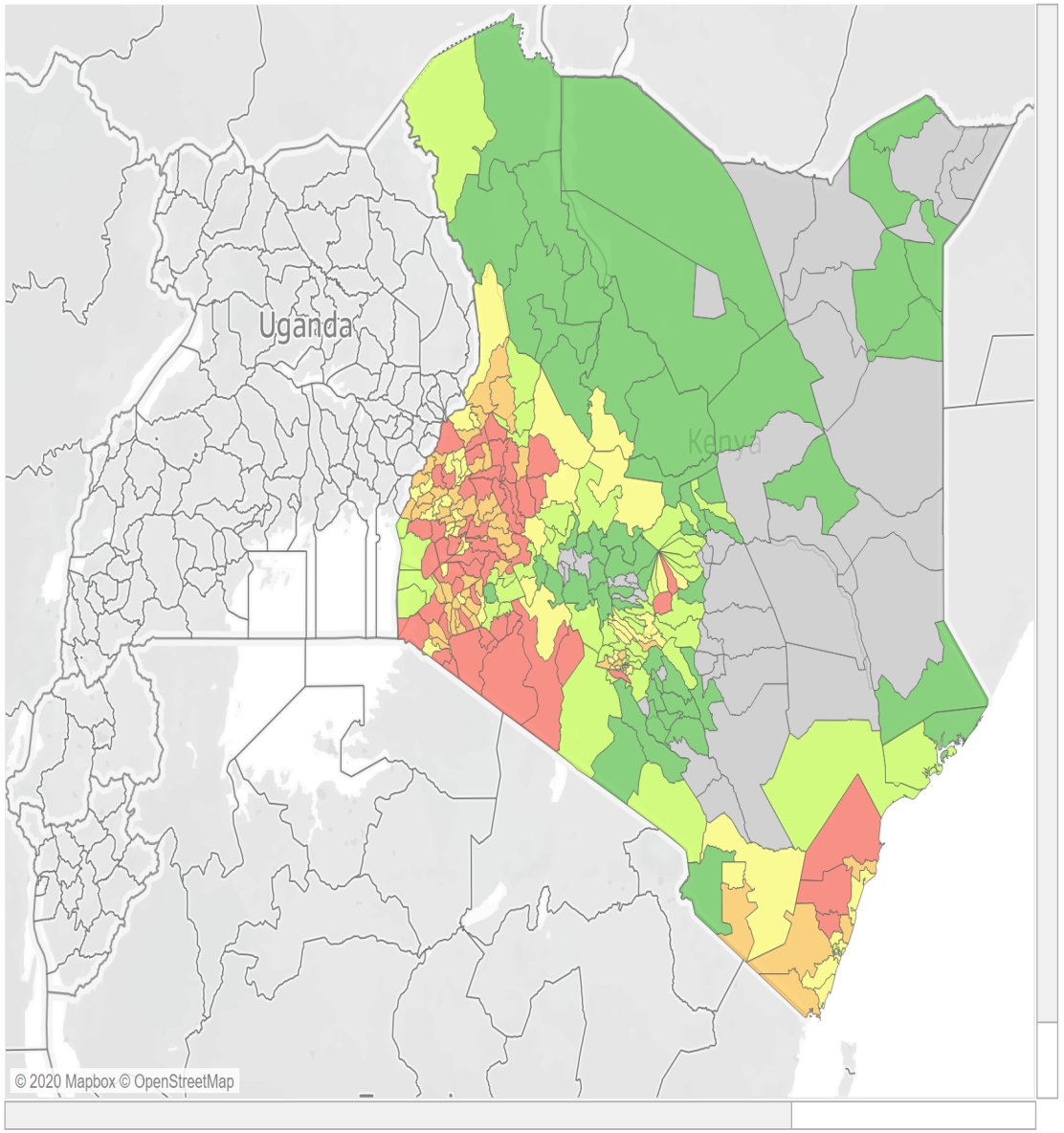


The spread of Rift Valley Fever depends to a large extent on a number of factors, such as the environment, infrastructure, animal, and health services. In this interactive map, we will look at some of these factors to understand which areas of Kenya are most vulnerable to RVF. Some of the factors that was used in this model can be found here: https://vizhub.healthdata.org/lbd/vaccines

Stage 1: Vulnerability to an index case of RVF: NOVEMBER

Rift Valley Vulnerability in Kenya

Stage Stage 1: Index Case



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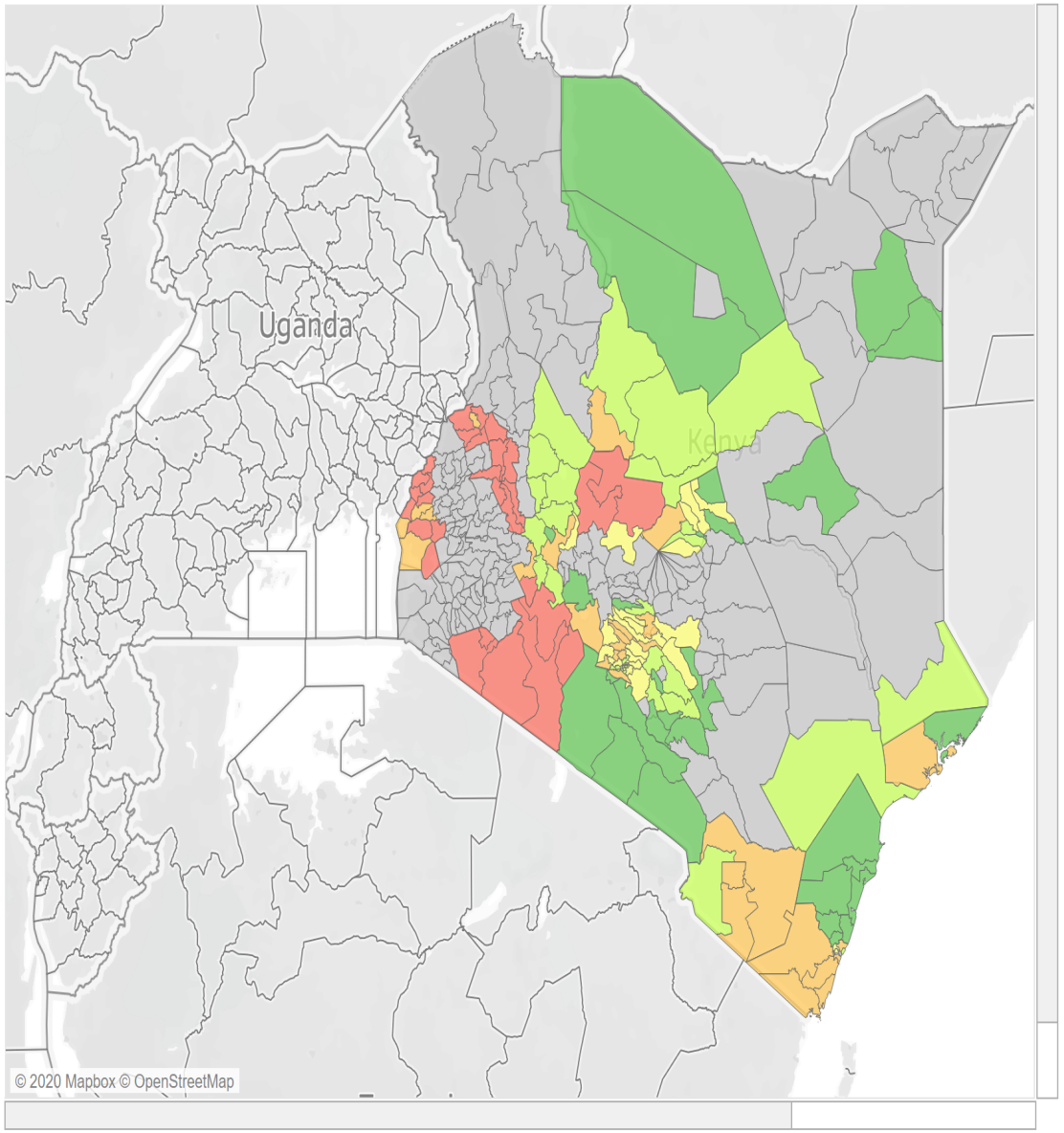
Stage 2: Vulnerability to a LOCAL OUTBREAK of RVF: November

Rift Valley Vulnerability in Kenya

Stage Stage 2: Outbreak



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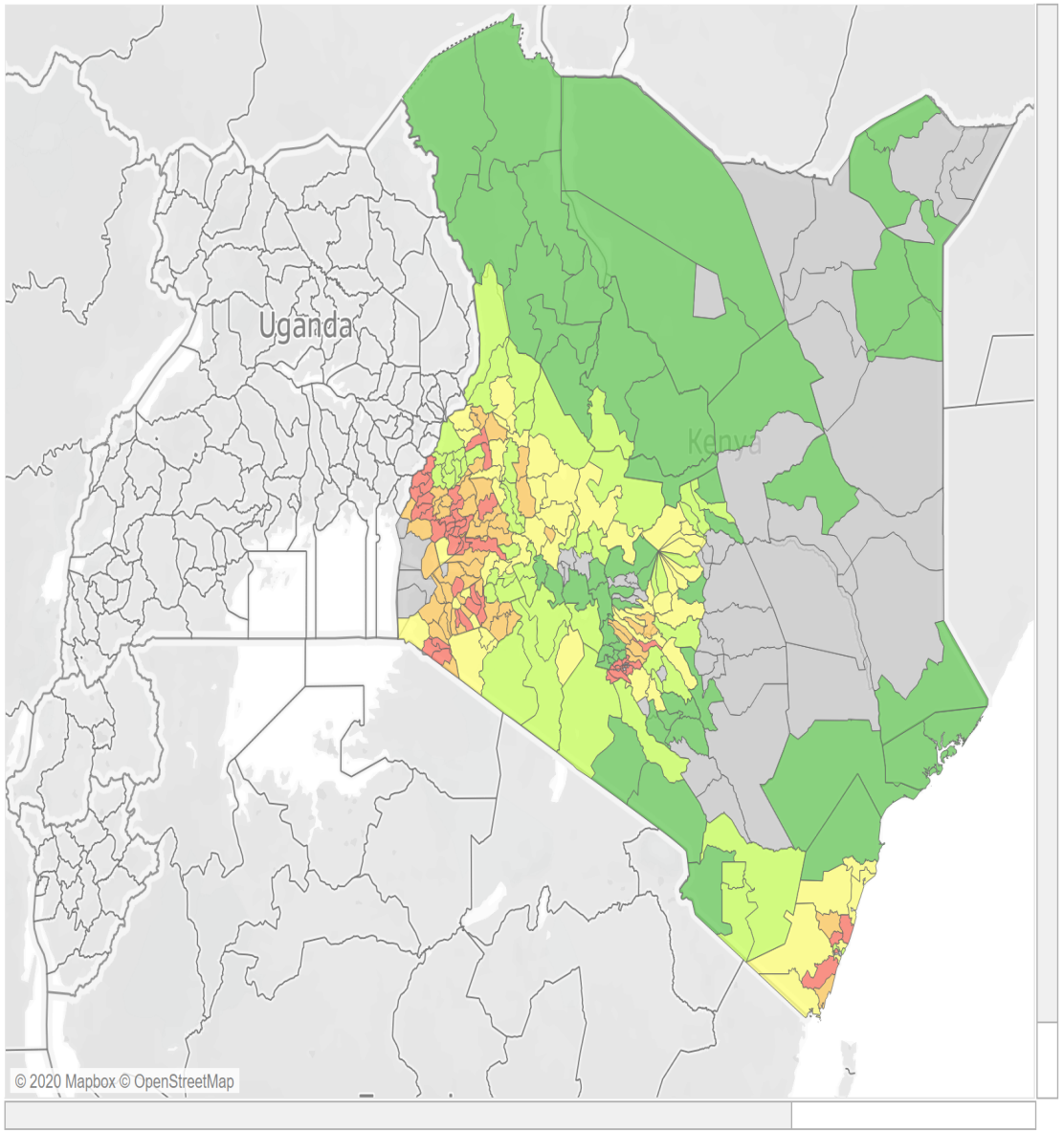
Stage 3: Vulnerability to an EPIDEMIC of RVF: November

Rift Valley Vulnerability in Kenya

Stage Stage 3: Epidemic



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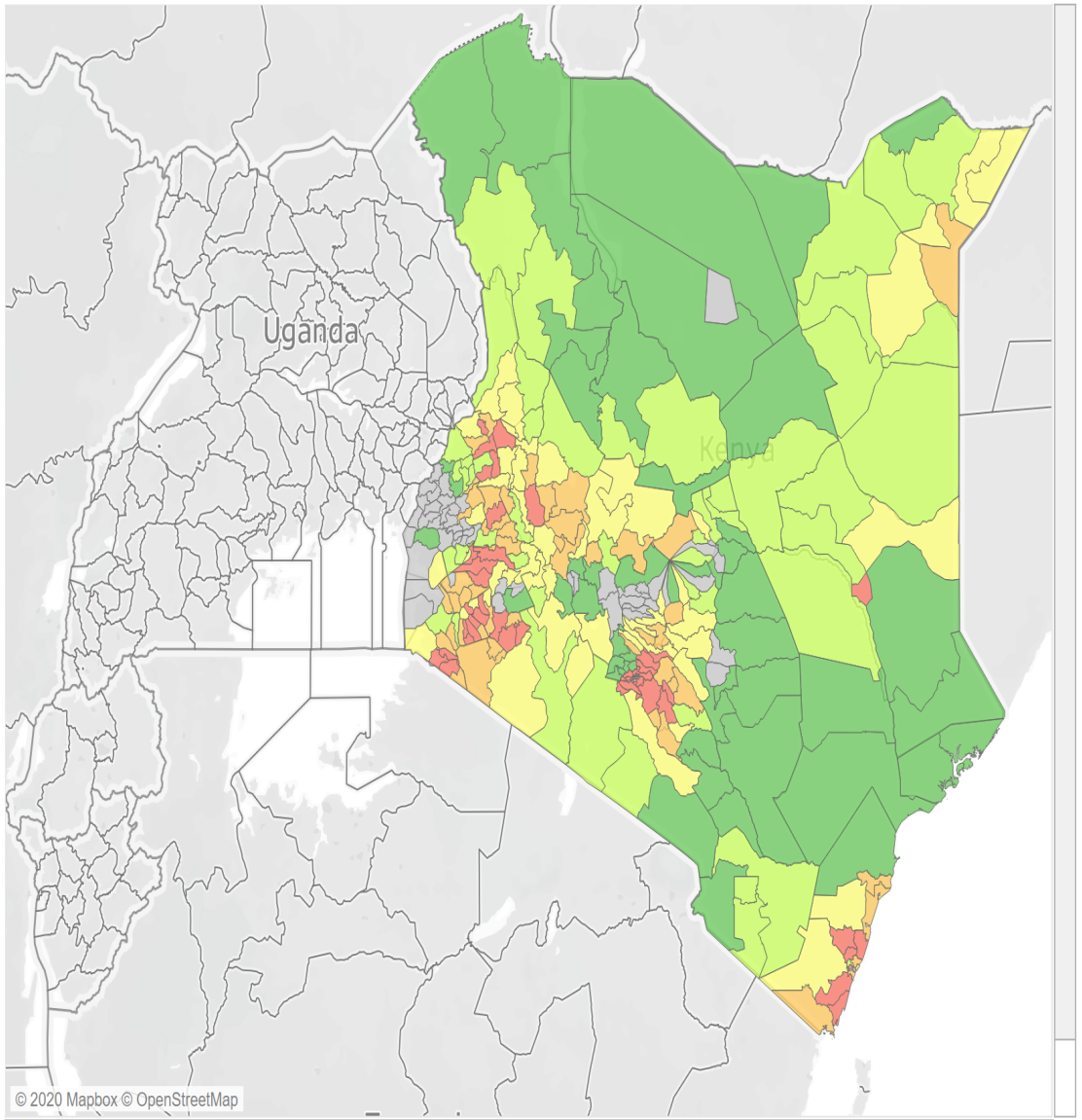
Stage 3: Vulnerability to an epidemic of RVF: November FUTURE WITH CLIMATE CHANGE

Rift Valley Vulnerability in Kenya

Stage Stage 3: Epidemic



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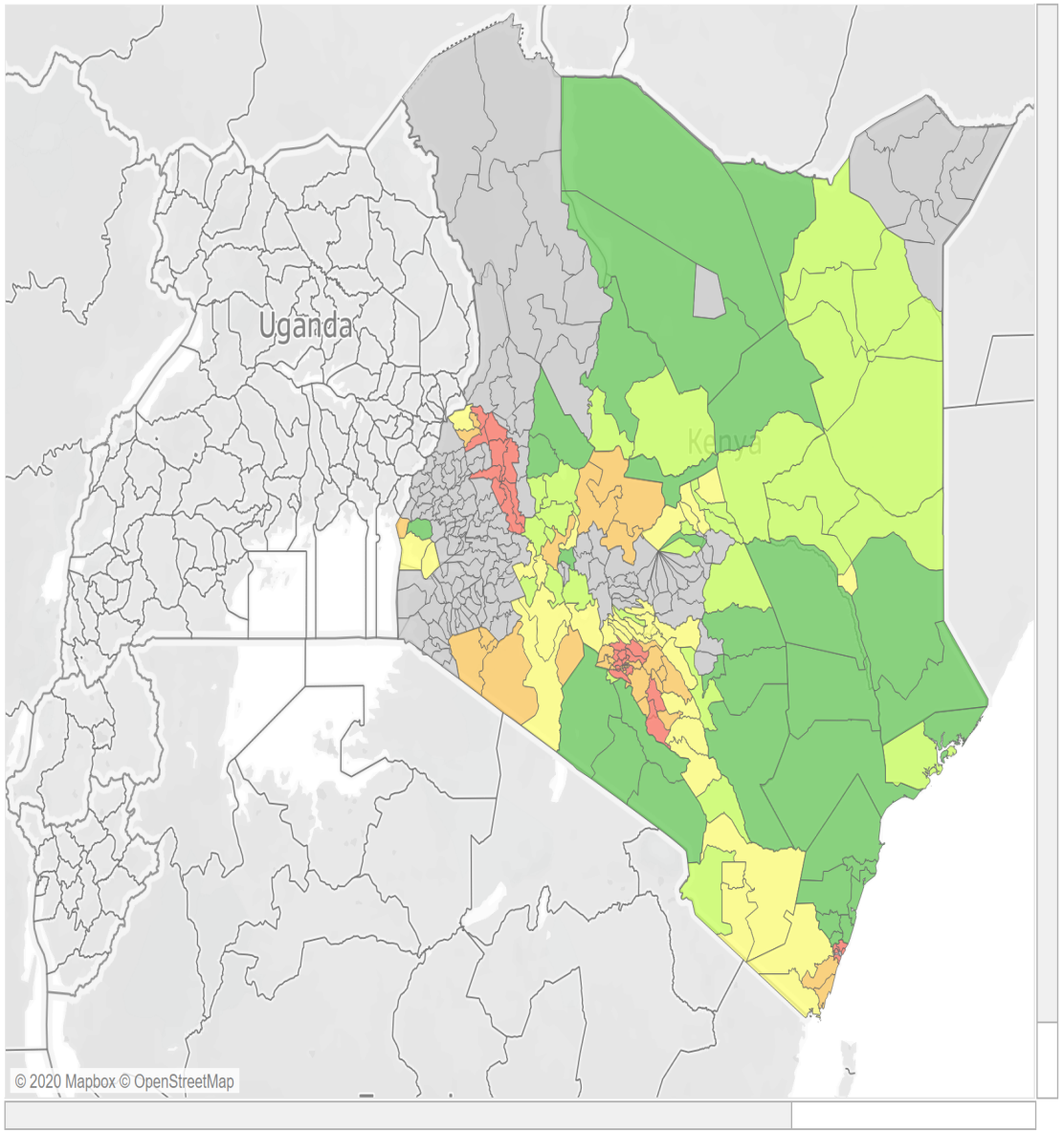
Stage 3: Vulnerability to a LIVESTOCK epidemic of RVF

Rift Valley Vulnerability in Kenya

Stage Stage 3: Epidemic



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United World Antiviral Research Network: UWARN

Multiple Principal Investigators:

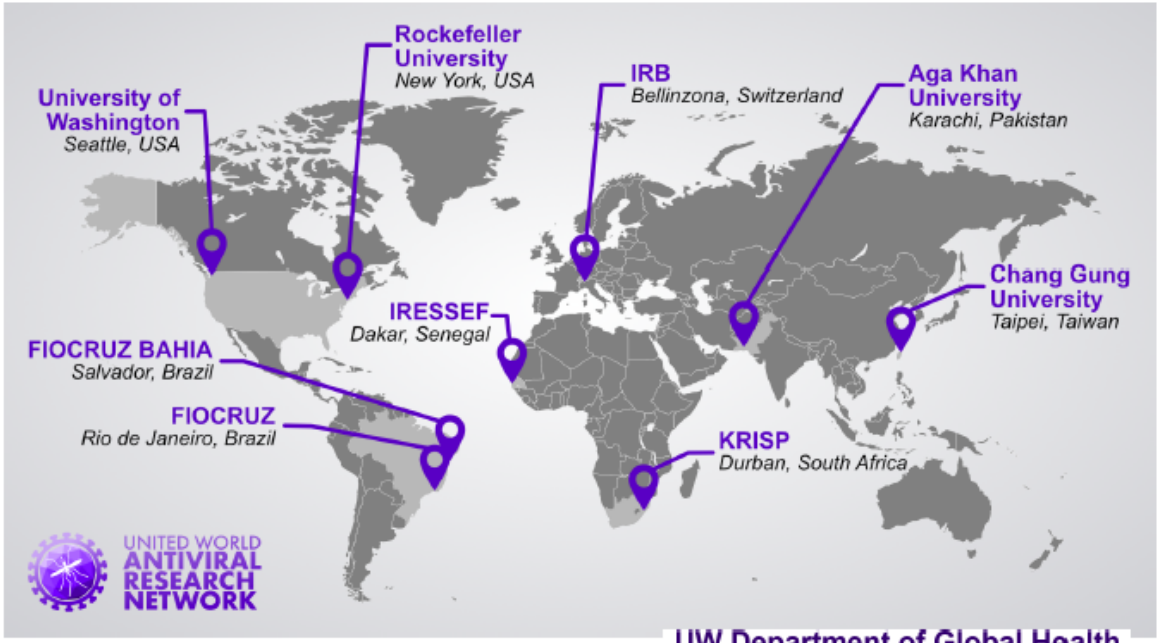
The University of Washington

Center for Emerging & Re-Emerging Infectious Disease (CERID)
MPI: Wes Van Voorhis MD PhD

Department of Global Health
MPI: Judy Wasserheit MD MPH

Center for Innate Immunity and Immune Disease (CIIID)
MPI: Michael Gale Jr. PhD

Center of One Health Research (COHR)
MPI: Peter Rabinowitz MD MPH



ALLIANCE for PANDEMIC PREPAREDNESS
UNIVERSITY of WASHINGTON

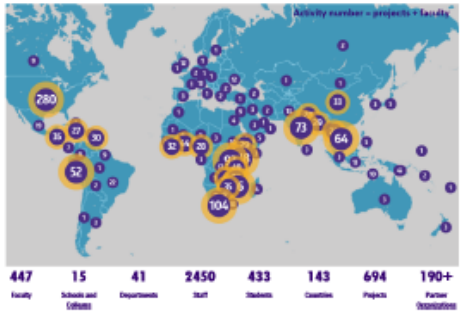
CERID
Center for Emerging and Re-emerging Infectious Diseases

CIID
CENTER FOR INNATE IMMUNITY AND IMMUNE DISEASE

CREID
Centers for Research in Emerging Infectious Diseases

Center for One Health Research

UW Department of Global Health



Arbovirus Research

UWARN: surveillance for Arboviruses and other emerging pandemic viruses, research on diagnostics, therapeutics, and viral immune responses

- **AIM 1:** Laboratory capacity and clinical cohorts in South America, West and South Africa, and South and East Asia
- **AIM 2:** Develop specific human neutralizing monoclonal antibodies (Hu-nMabs) for arboviruses
- **AIM 3:** Develop *de novo* Latching Orthogonal Cage–Key pRotein (LOCKR) switches for point-of-care (PoC) assays
- **AIM 4:** Molecular basis of arbovirus innate immunity antagonism, identifying genes and gene networks

SARS-CoV-2/COVID-19 Research

UWARN: surveillance for SARS CoV-2, research on diagnostics, therapeutics, and viral immune responses

- **AIM 1**: Understand SARS-CoV-2 using genomic approaches
  - Establish specimen and information sharing networks
  - Leverage UW Global Health and CREID institutions
- **AIM 2:** Therapeutic Hu-nMabs for SARS-CoV-2
- **AIM 3:** LOCKR for PoC diagnostics for spike protein (virus) and antibody detection
- **AIM 4:** Molecular basis of SARS-CoV-2 innate immunity antagonism, identifying genes and gene networks over time and with differing disease outcomes

CREID
Centers for Research in Emerging Infectious Diseases

UWARN
UNITED WORLD ANTIVIRAL RESEARCH NETWORK

ZIBRA-2 project - Zika In Brazil Realtime Analysis

- Unique South-South collaboration

between **FIOCRUZ**-Brazil (Dr. Alcantara) and **KRISP**-South Africa (Dr. de Oliveira)

- Mobile laboratory: map and elucidate the etiologies and genetic variation of viral outbreaks to inform public health intervention
- UWARN aims to establish a similar mobile

lab surveillance system within Senegal.

CREID Centers for Research in Emerging Infectious Diseases

FIOCRUZ

krisp

IRESSEF

UWARN

UNITED WORLD ANTIVIRAL RESEARCH NETWORK

Potential "Value Added" of Initiatives

- Provide fine scale data across regions for pandemic preparedness, including environmental change
- Align cutting edge biomedical capacity with local pandemic response.
- Demonstrate value of integrated approach

Questions for the EAB

- **Is the APP approach appropriate & strategic?**
  - What are its strengths & weaknesses?
  - How could we improve it?
- **What foci/activities should APP prioritize** as you think about the intersection of:
  - the most potentially high impact *unmet* PDP needs & opportunities, and
  - the broader UW capabilities?