

Evaluating the risk of spread of H5N1 highly pathogenic avian influenza in Kenya

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Risk mapping

- **Identify risk question**

- **risk of spread of HPAI**

- **Identify risk factors**

- Proximity to roads

- Proximity to navigable rivers

- Poultry density

- Proximity to markets (represented by cities with pop > 100,000)

- Proximity to surface water and wetlands

- Proximity to irrigated areas

- **Weigh risk factors**

- **from expert opinion**

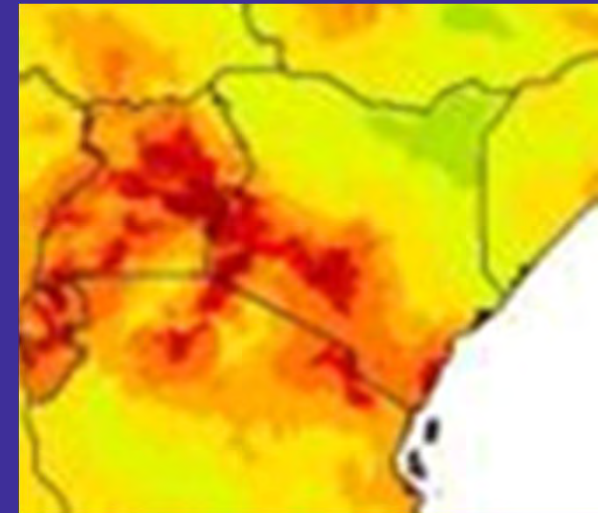
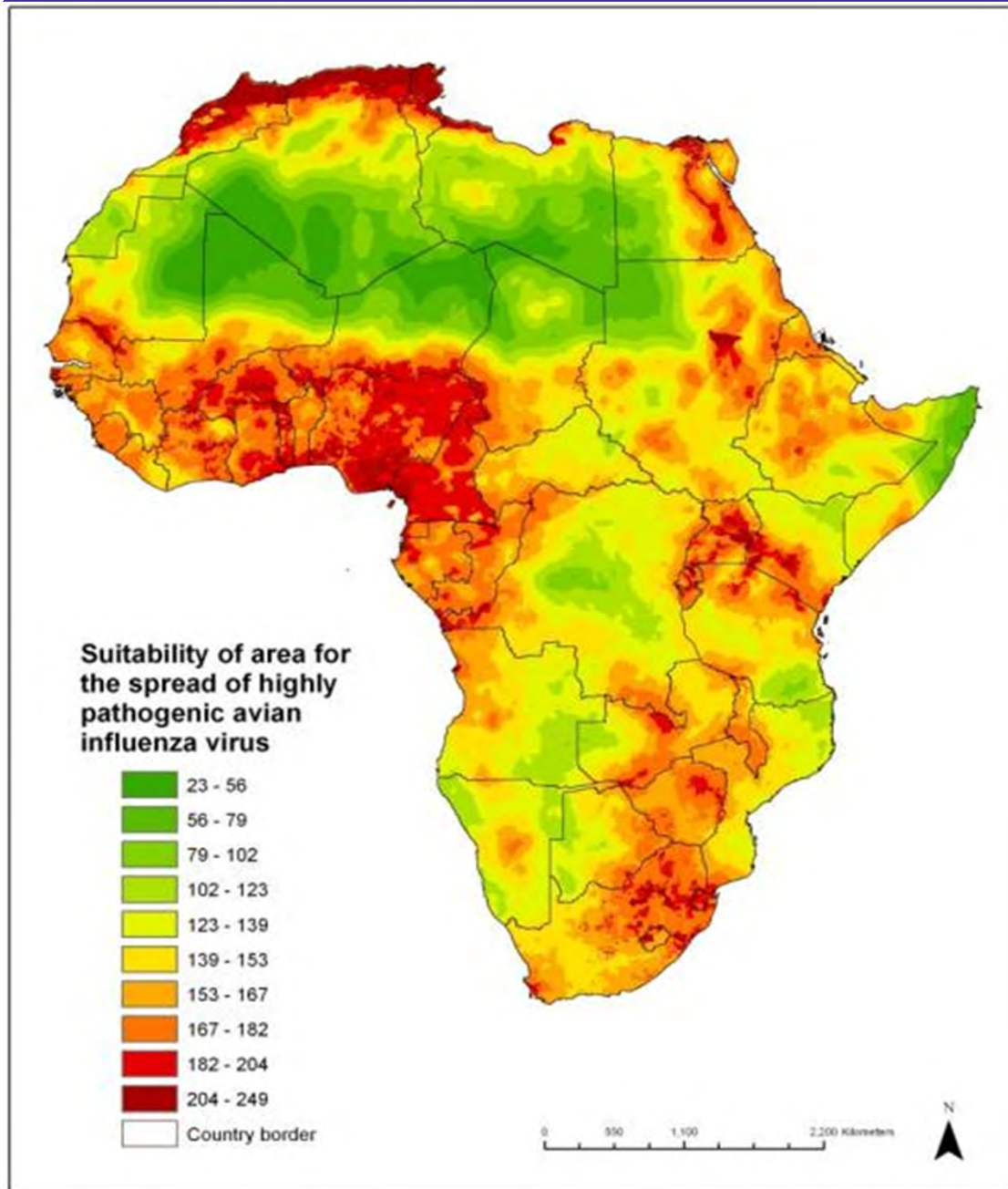
- **Combine risk factor maps and weights to derive risk map**

- **weighted linear combination**

Average weights for risk factors associated with the spread of highly pathogenic avian influenza from expert opinion elicitation.

Risk factor	Mean weight
Poultry density	0.2692
Proximity to markets	0.2400
Proximity to primary roads	0.1924
Proximity to water or wetlands	0.1375
Proximity to secondary roads	0.0879
Proximity to irrigated areas	0.0436
Proximity to navigable rivers	0.0294

Risk map for the spread of HPAI

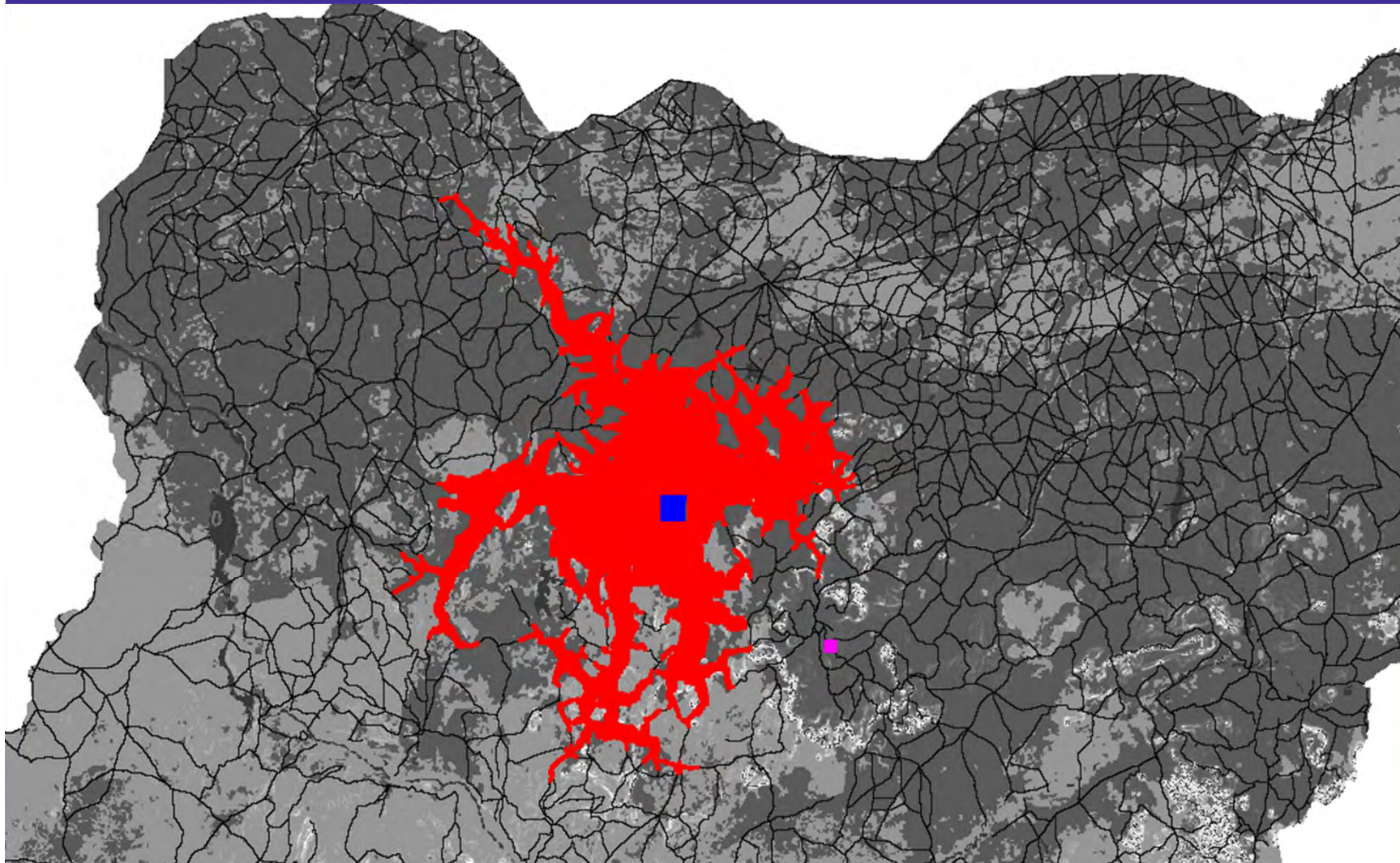


Mombasa, Nairobi and Nyanza are high risk areas

A transport model for HPAI in Nigeria (and Kenya)

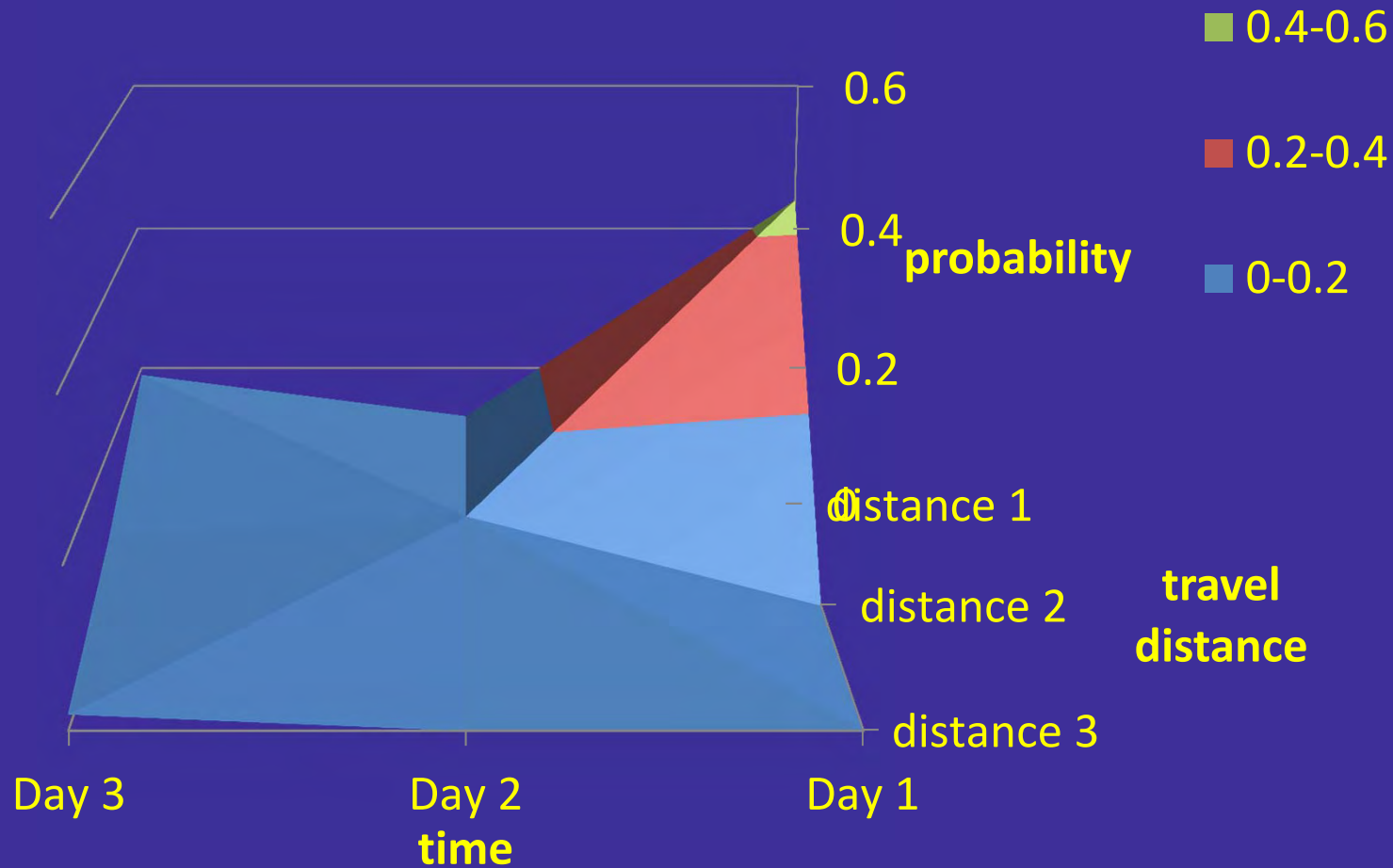
How far can a truck travel per day?

Grid cells: time to cross a grid cell



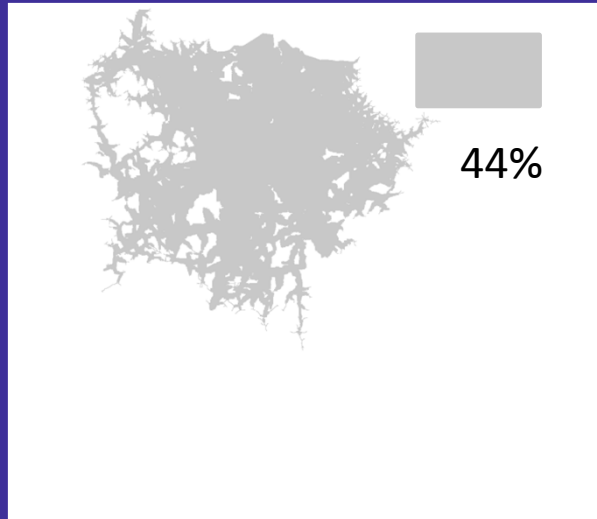
Bird flu in Nigeria (and Kenya)

Probability of causing a secondary outbreak from bird flue epidemics in Nigeria

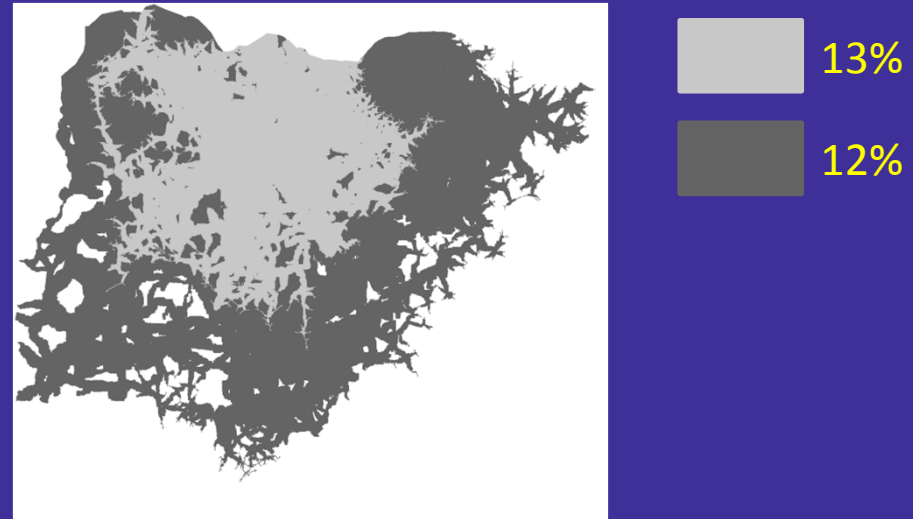


Bird flu in Nigeria (and Kenya)

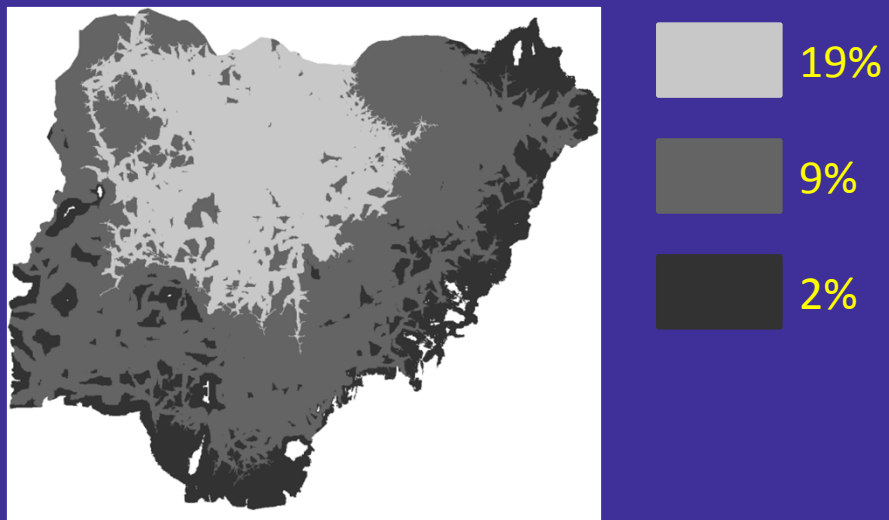
Day 1



Day 2



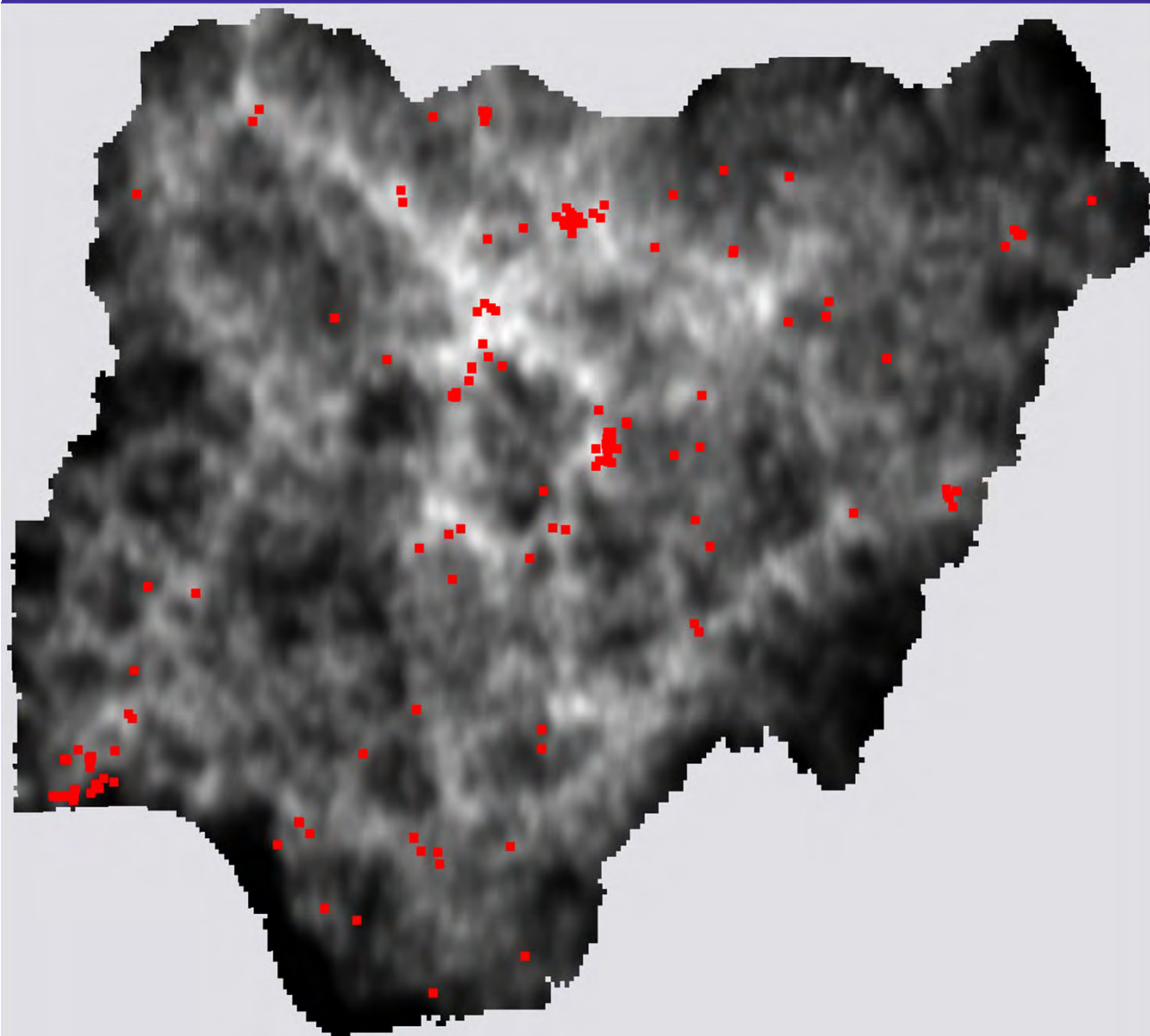
Day 3



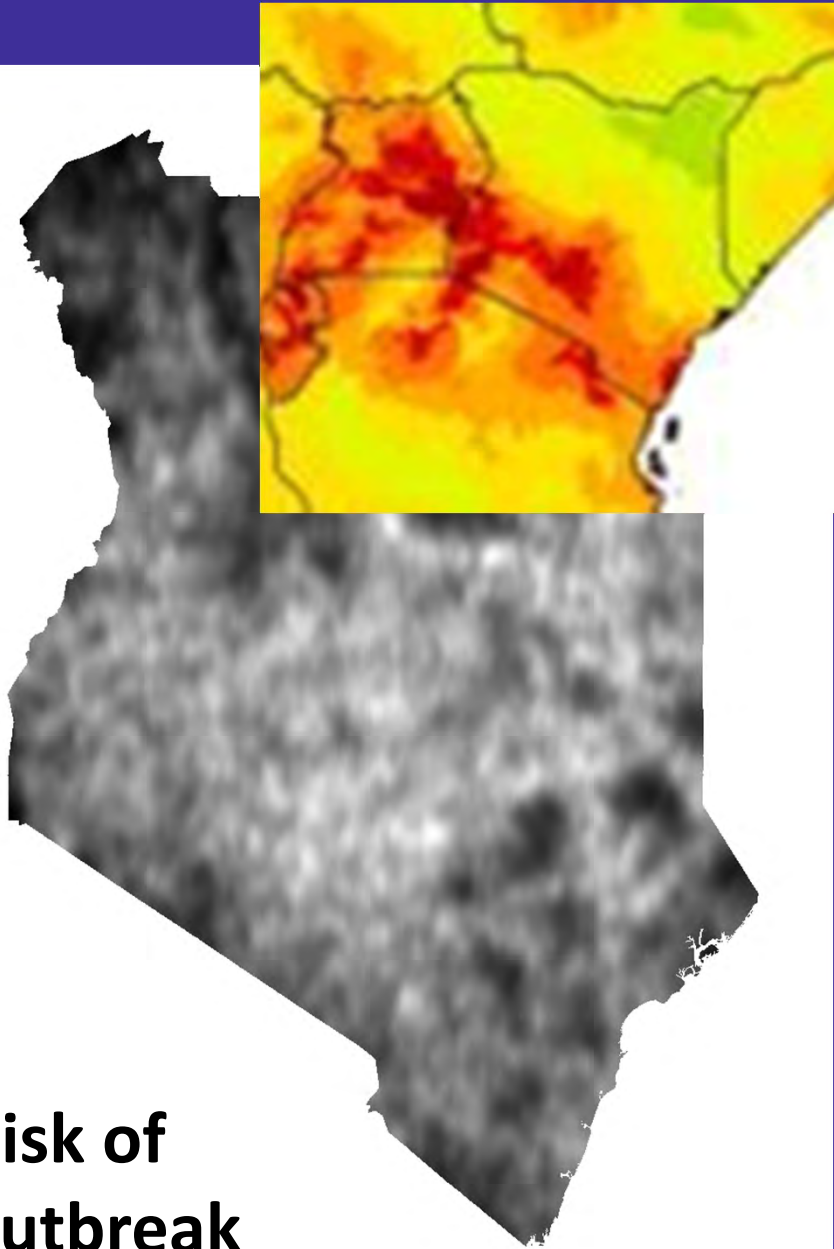
When and where are outbreaks to be expected

Bird flu in Nigeria

Predictive modeling and historical outbreaks



...and Kenya



**Risk of
outbreak**



**Dead
chickens**

So that is (part of) what epidemiology can do

What can viral research do for us?

- Diagnostics

**- rapid detection is key to many disease mitigation measures
field test kits or laboratory facilities**

- Identify pathways of disease spread by virus typing

- we “speculate” on how the virus spreads, you can tell us

What’s going on now?

Rift Valley Fever Virus

**Multi-national, multi-sector, multi-million
multi-model, multi-cool and multi-everything**

Thank you for your attention!