

Computational epidemiology

Essentially means:

- Mathematical modeling [dynamic processes]
- Statistical techniques [inference/calibration]
- Computational tools [simulation]
- Data-driven approaches [disease cases, ...]

MODELS ARE USEFUL:

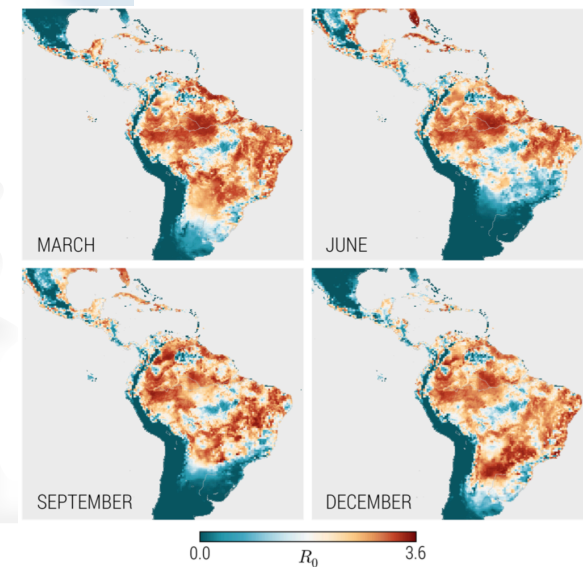
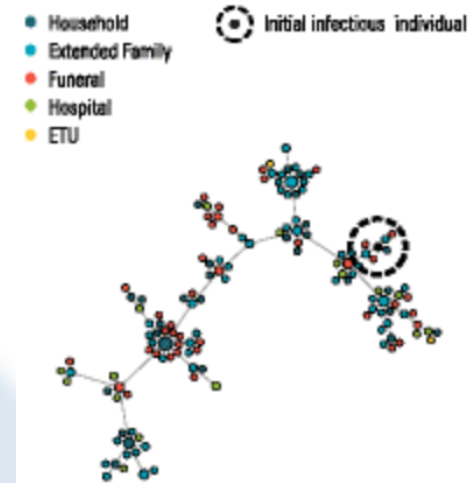
1. Estimate unobserved variables (eg. immunity)
2. Simulate to forecast and inform policy

Recently working on:

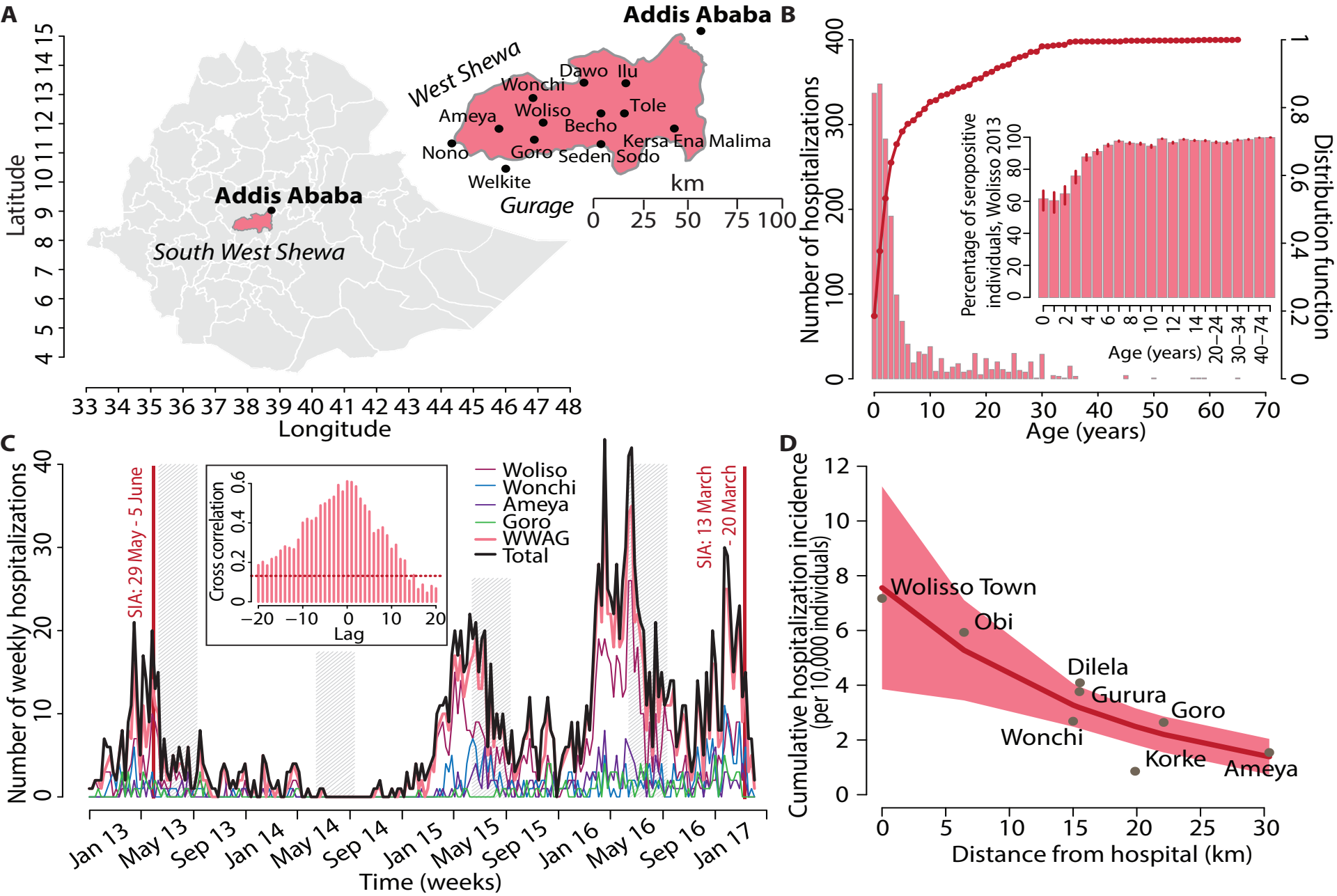
1. Ebola in West Africa – 2014
2. Zika in the Americas – 2015
3. Chikungunya outbreak in IT – 2017
4. Measles in IT [Lorenzin: new decree/law – 2017]
5. VZV in US [MERCK] and in UK [PHE] – 2016-17

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April 2014 – September 2014

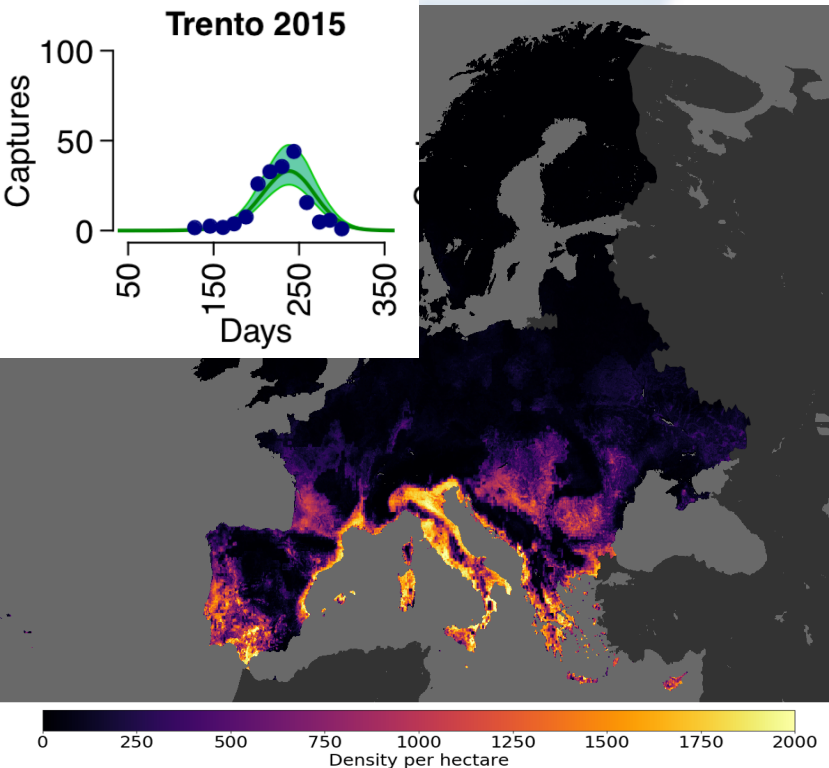


Epidemic threats: measles in ET

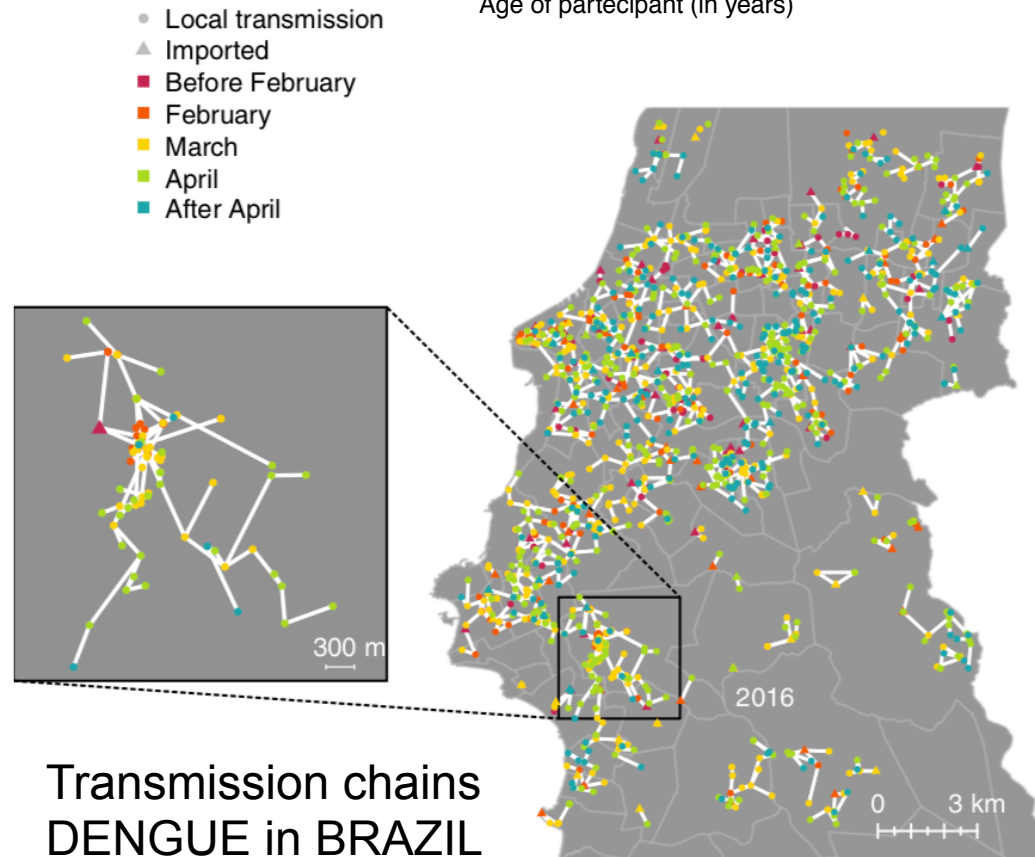
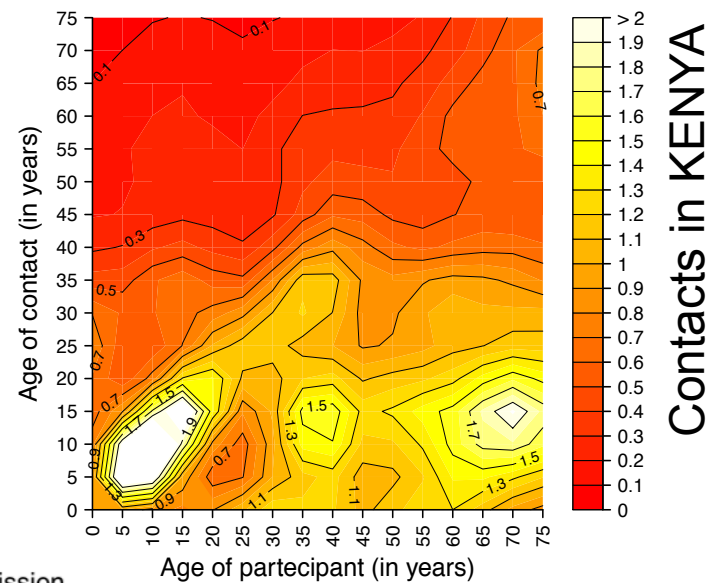


Modeling

1. Mechanistic dynamic models
[individual-based – ode – stochastic]
2. Statistical inference
3. Data-driven approaches



Risk of Chikungunya outbreaks in EU

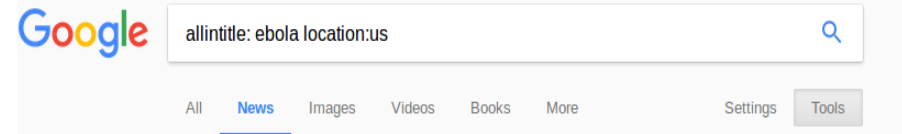
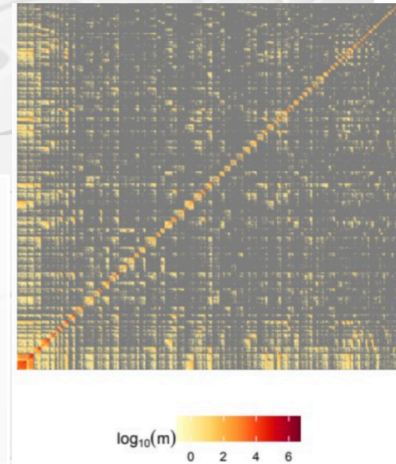
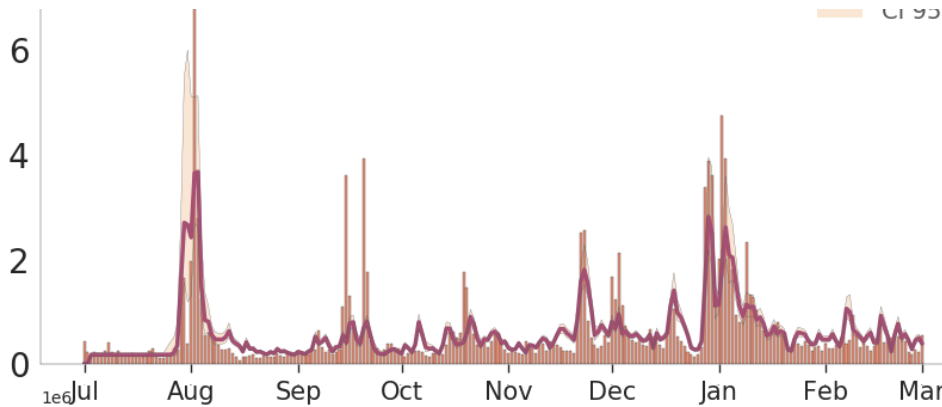
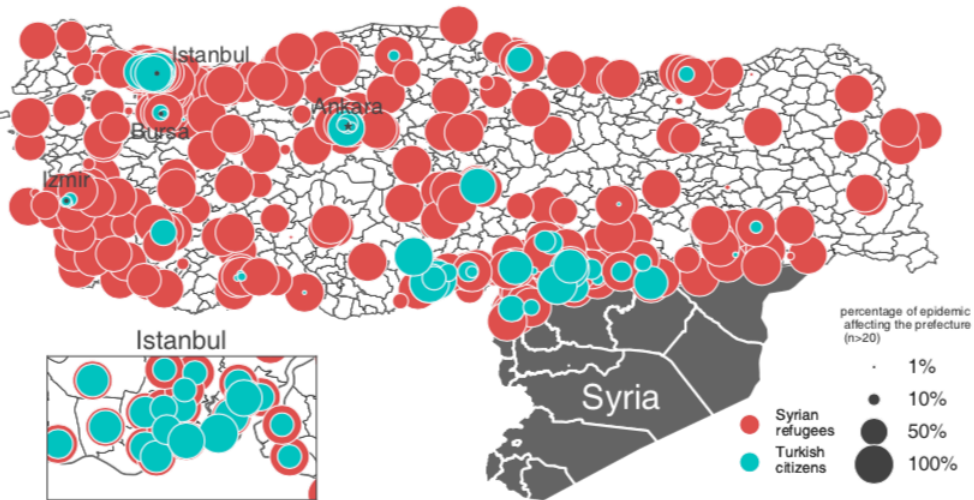


Transmission chains DENGUE in BRAZIL

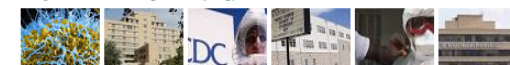
Epidemic modeling and digital data

1. Public health implications of the recent political crisis in Syria: measles & mobile phones data
2. Spread of awareness: peer-to-peer interactions VS media Wikipedia page views & Google News

20% of refugees contacts with turkish citizens



- All news ▾ Oct 1, 2014 ▾ Sorted by date ▾ Hide Duplicates ▾ Clear
-  **US Patient Aided Ebola Victim in Liberia**
New York Times - Oct 1, 2014
The family of Marthale Williams, an Ebola victim, said Thomas E. Duncan helped take her to and from a hospital in Monrovia last month. Credit Daniel ...
 -  **Ebola Patient Was Released From Texas Hospital Despite Telling ...**
ABC News - Oct 1, 2014
 -  **How the CDC Is Fighting Ebola in the United States**
New York Magazine - Oct 1, 2014
 -  **Why you probably don't have Ebola — even if you shook hands with ...**
The Week Magazine - Oct 1, 2014
 -  **Ebola Phobia? 5 Reasons Why You Should Not Panic Over This Virus**
In-Depth - NBCNews.com - Oct 1, 2014
 -  **Five Dallas ISD students may have had contact with Ebola patient ...**
Blog - Dallas Morning News (blog) - Oct 1, 2014



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