

Pandemic Disease Visualisations

Or How to Save the Human Race

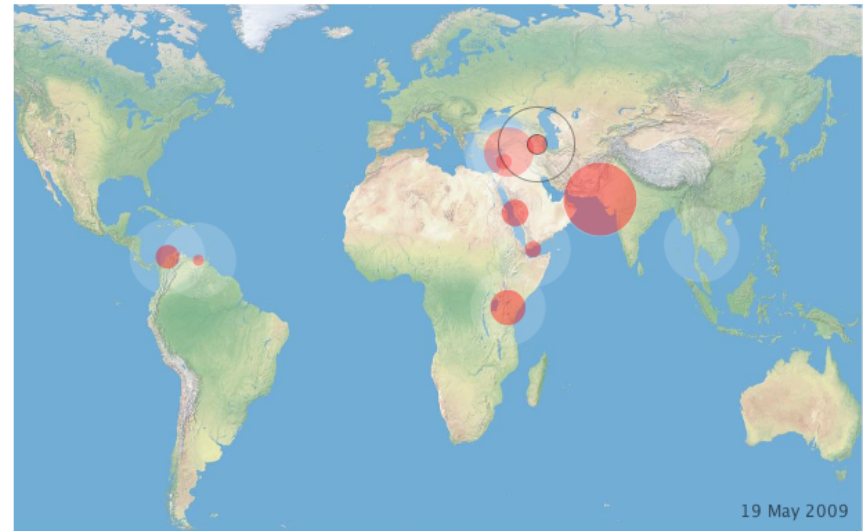
Robbie Howe

What?

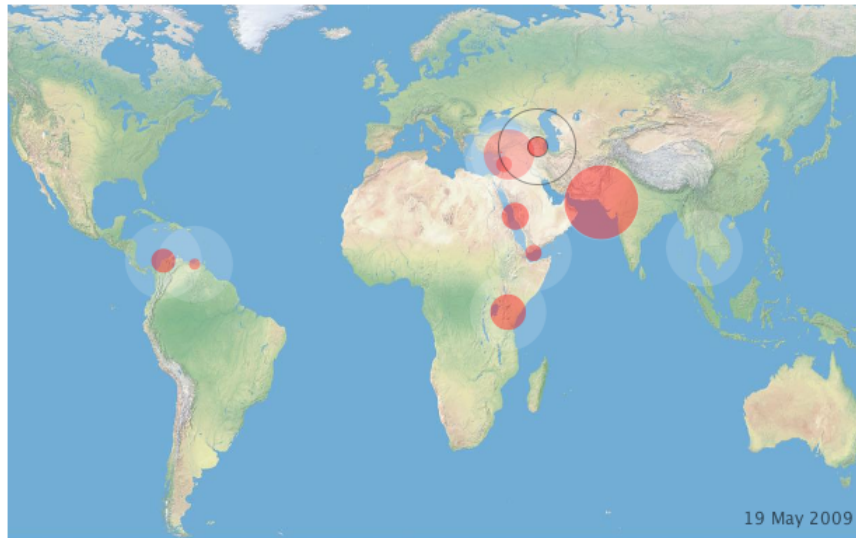
- Hospitalisation and death records
- Other pandemic data
 - Modelled human interaction
 - Host organism movements

Why Pandemics?

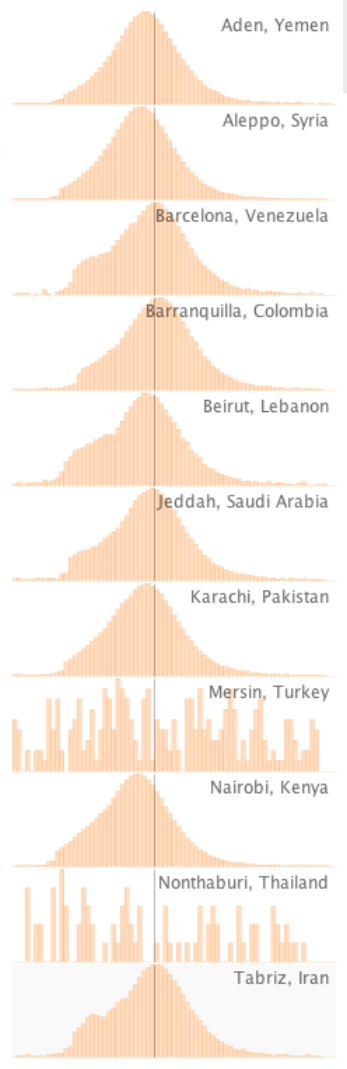
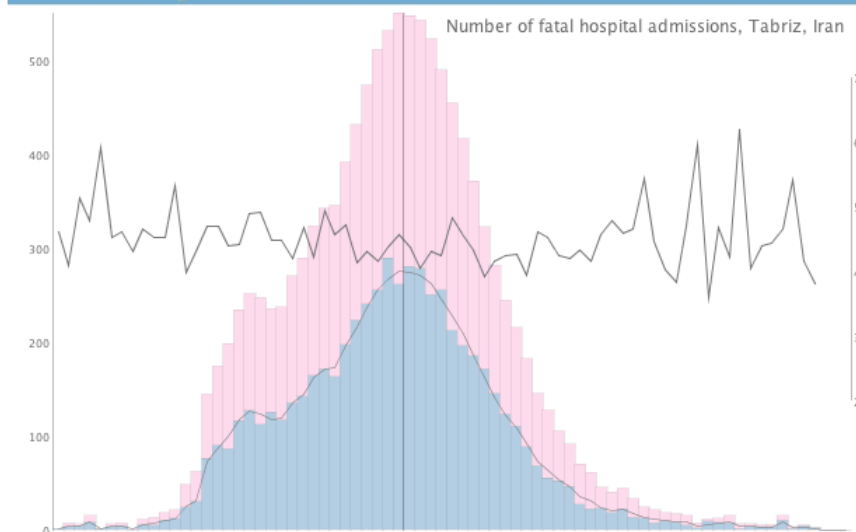
- Influenza, TB, malaria
- Wide-scale death and suffering
- Spread of a disease
- Quick response may be needed



VAST Challenge Entries



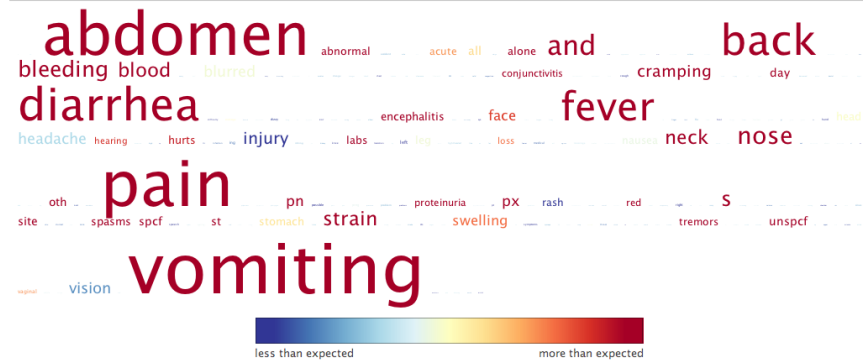
pain	2885 (11.4%)
vomiting	2296 (9.1%)
abdomen	1635 (6.5%)
fever	1192 (4.7%)
diarrhea	984 (3.9%)
back	826 (3.3%)
injury	567 (2.2%)
and left	423 (1.7%)
right	413 (1.6%)
nose	393 (1.5%)
vision	370 (1.5%)
rash	293 (1.2%)
bleeding	283 (1.1%)
headache	268 (1.1%)
neck	252 (1.0%)
blood	248 (1.0%)
blurred	229 (0.9%)
s	227 (0.9%)
laceration	195 (0.8%)
swelling	169 (0.7%)
strain	164 (0.6%)
face	158 (0.6%)
cough	149 (0.6%)
hand	149 (0.6%)
head	132 (0.5%)
possible	129 (0.5%)
px	125 (0.5%)
chest	121 (0.5%)
nausea	121 (0.5%)
pn	120 (0.5%)
stomach	120 (0.5%)
all	117 (0.5%)
ankle	117 (0.5%)
leg	103 (0.4%)
eye	101 (0.4%)
speech	97 (0.4%)
arm	93 (0.4%)
symptoms	88 (0.3%)
sts	85 (0.3%)
foot	83 (0.3%)
ear	82 (0.3%)
problems	82 (0.3%)
cramping	82 (0.3%)
shoulder	81 (0.3%)
difficulty	81 (0.3%)
pt	79 (0.3%)



VAST Challenge Entries

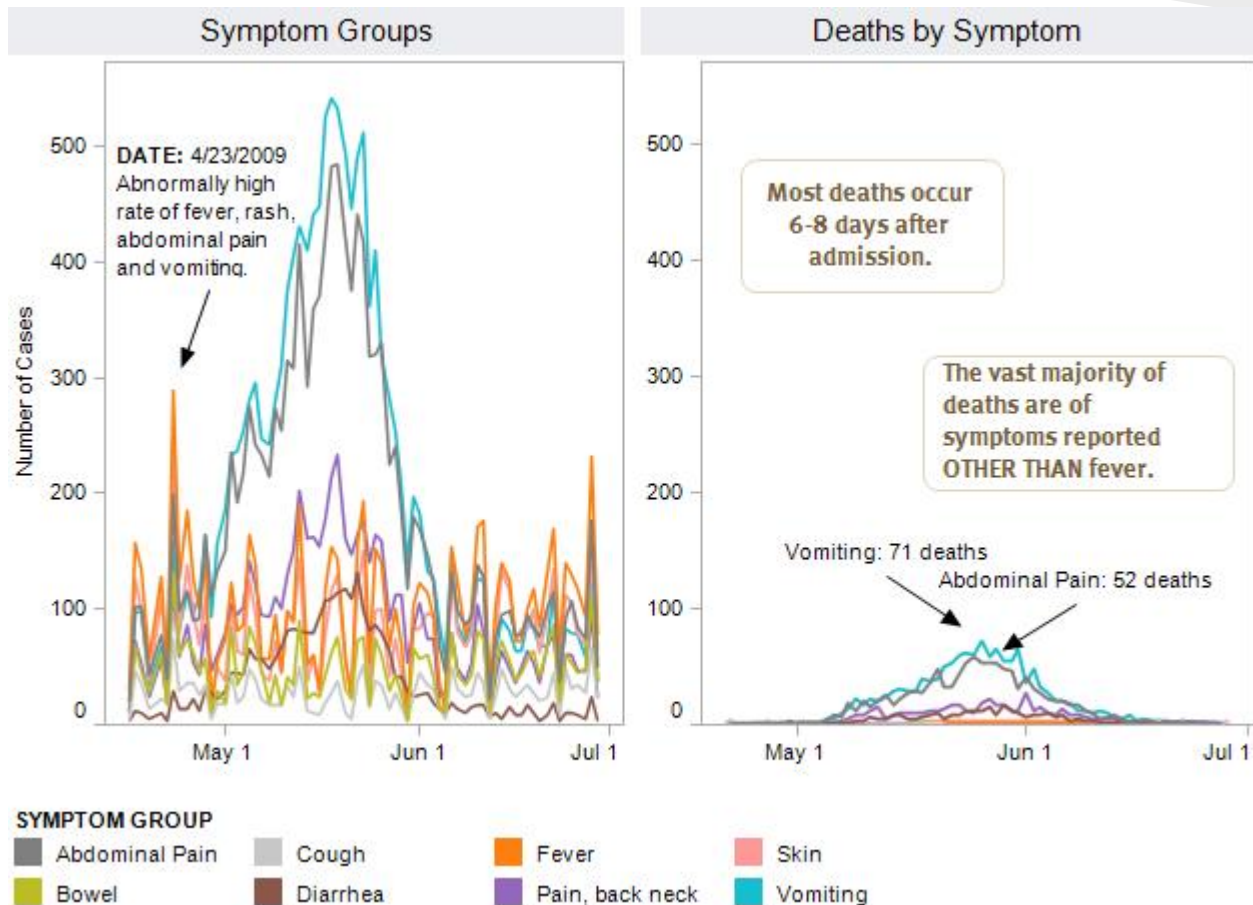


Showing all symptoms for Aden, Yemen

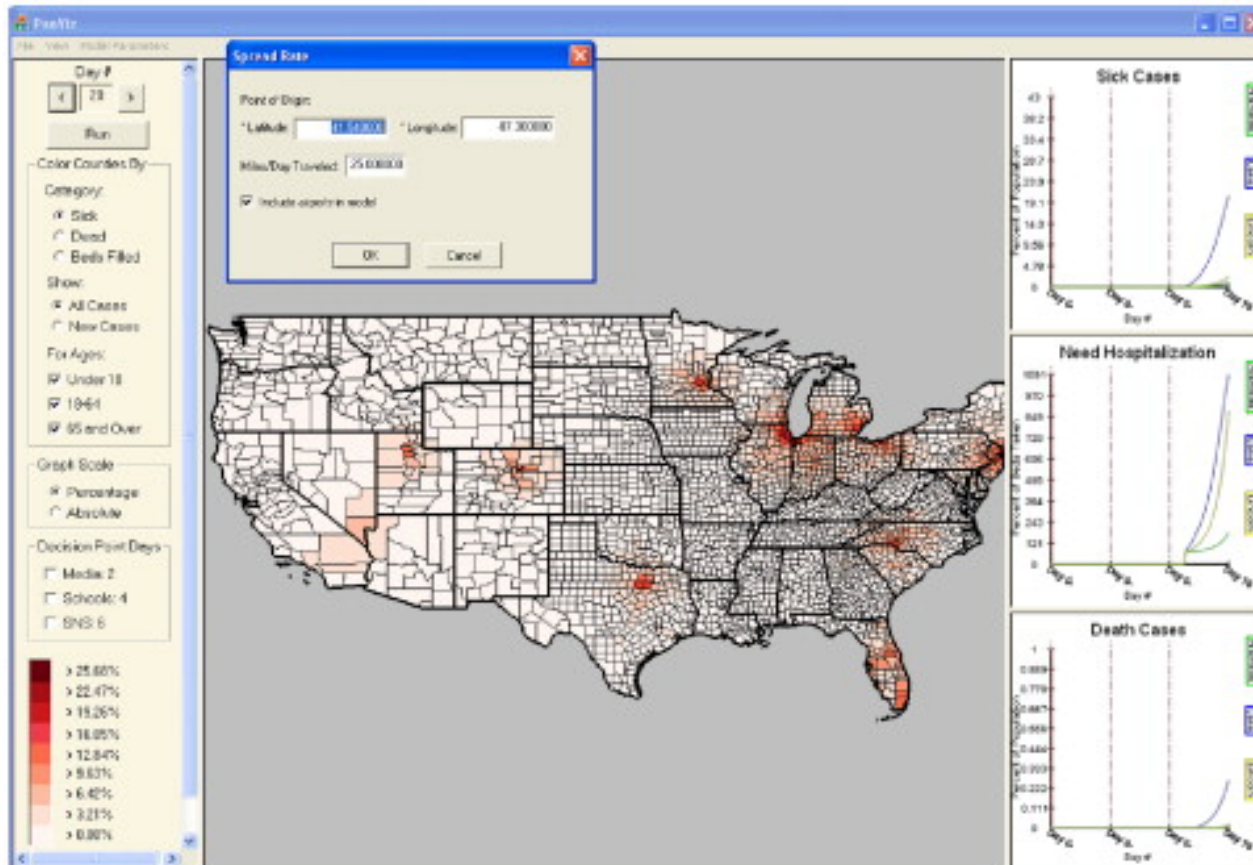


Showing fatal symptoms for Aden, Yemen

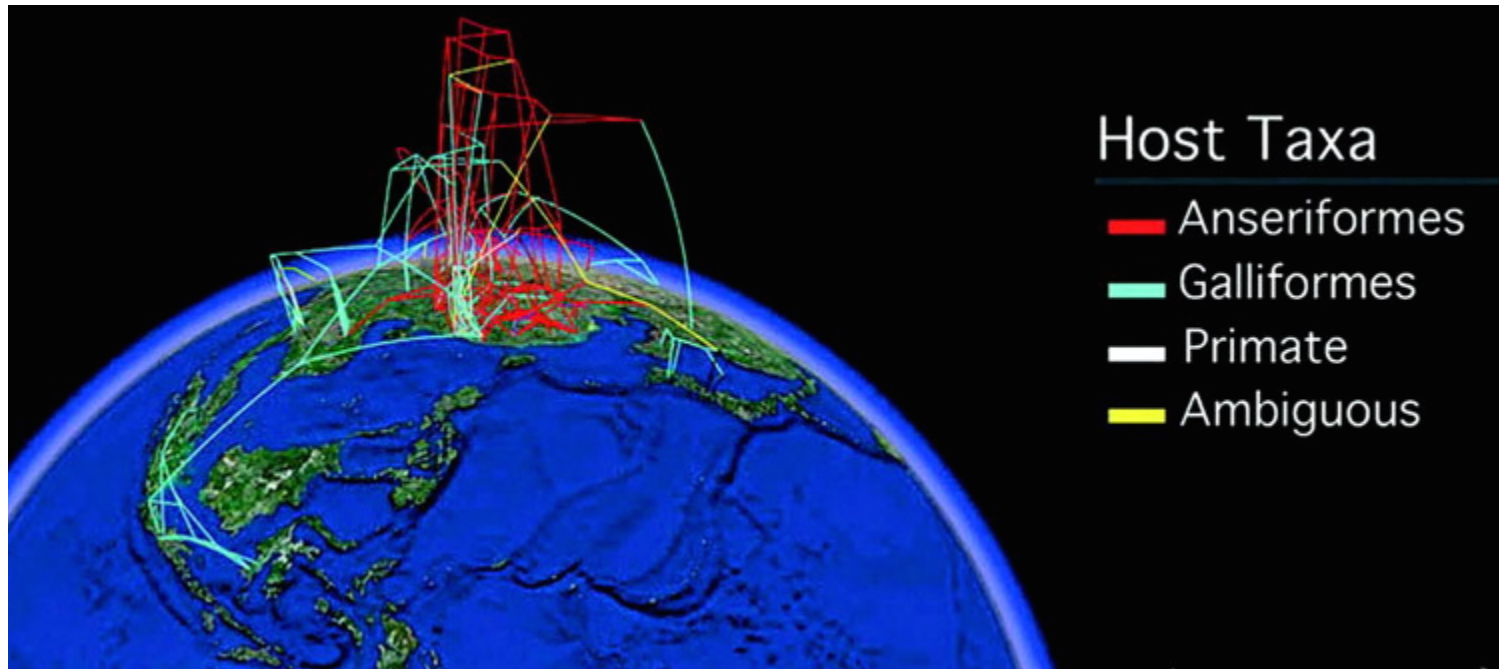
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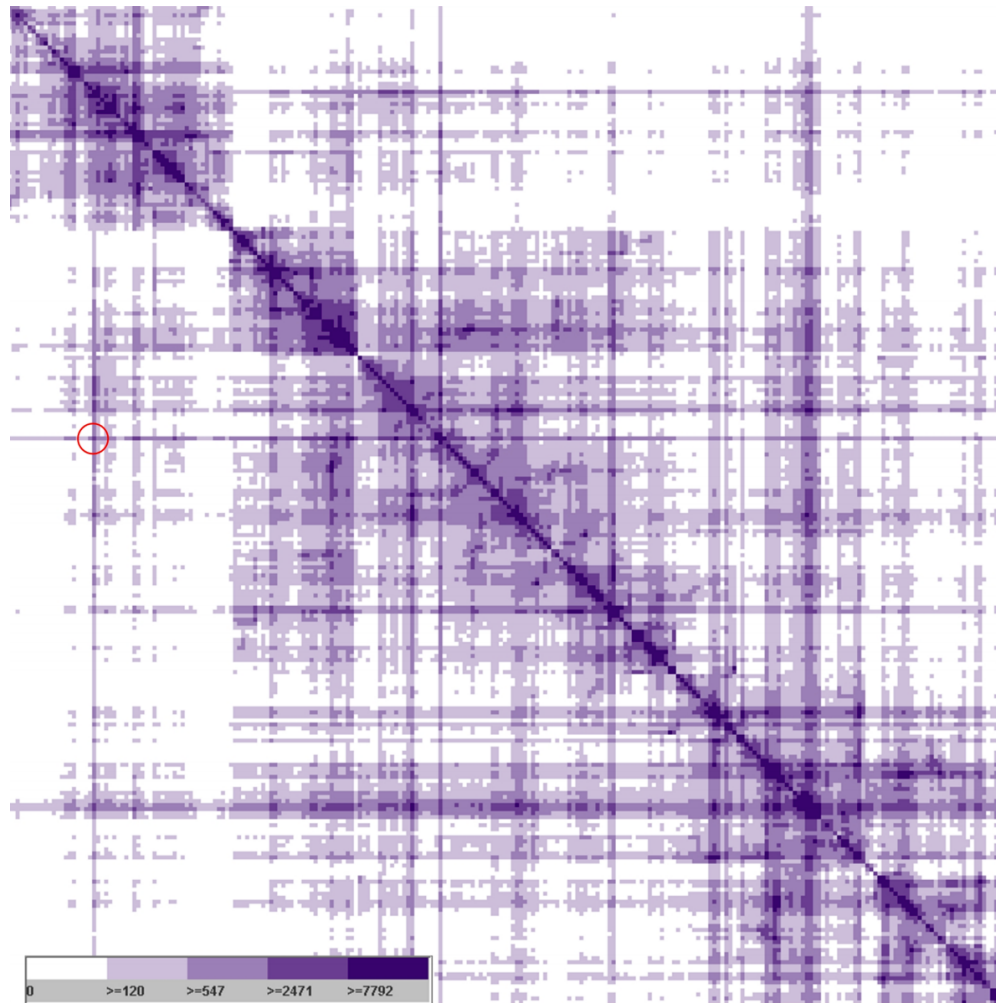
Current Research



Current Research



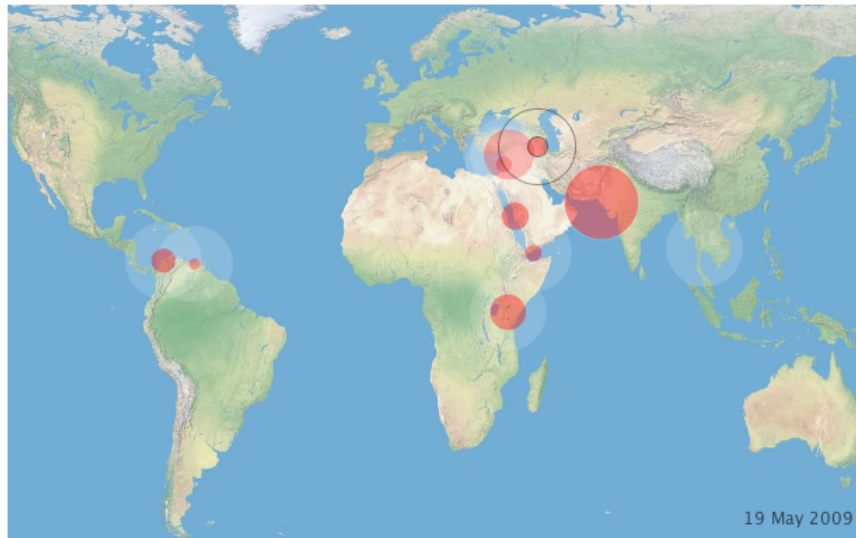
Current Research



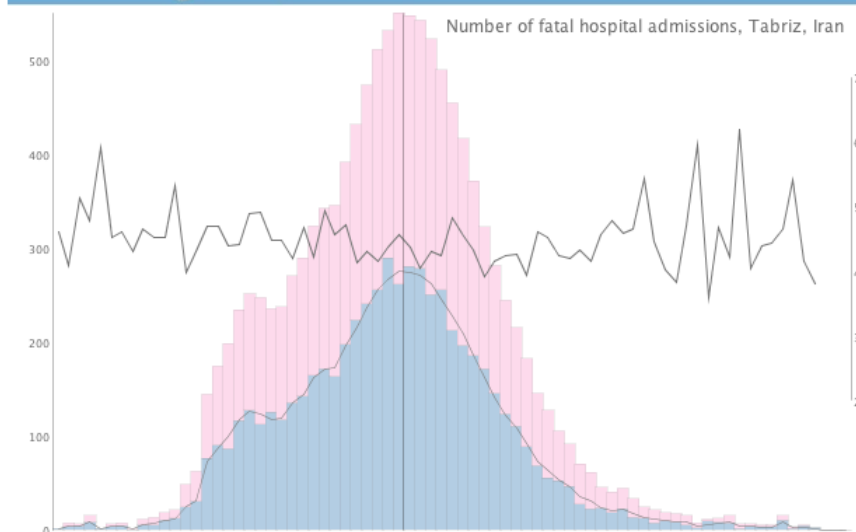
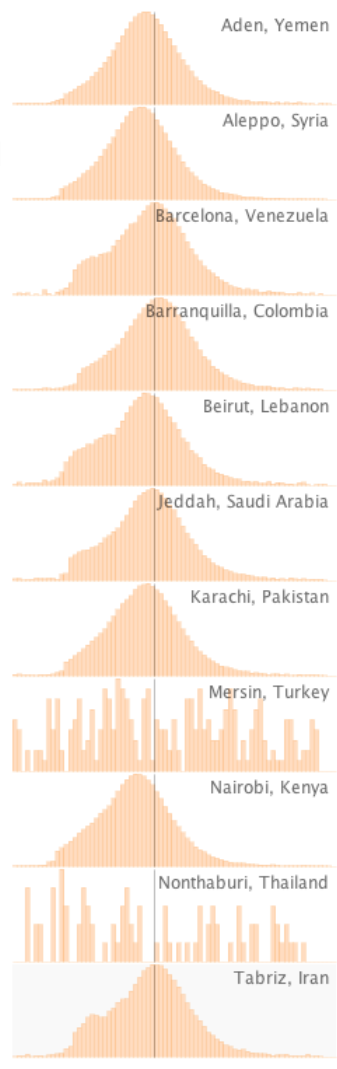
Visualisation Tasks

- Locate the origin of an outbreak
- Characterise the spread of the disease
- Provide symptom analysis
- Identify anomalies

Visualisation Tasks



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Available Tools

- Tableau
- Lyra, ManyEyes, CartoDB
- Geocommons
- Programming options

Conclusions and Future Work

- Current approaches effective
- Web-based programming tools
- Still deeper insight to be gained

Thank you