Epidemics on networks

Complessità nei sistemi sociali

Lorenzo Dall'Amico
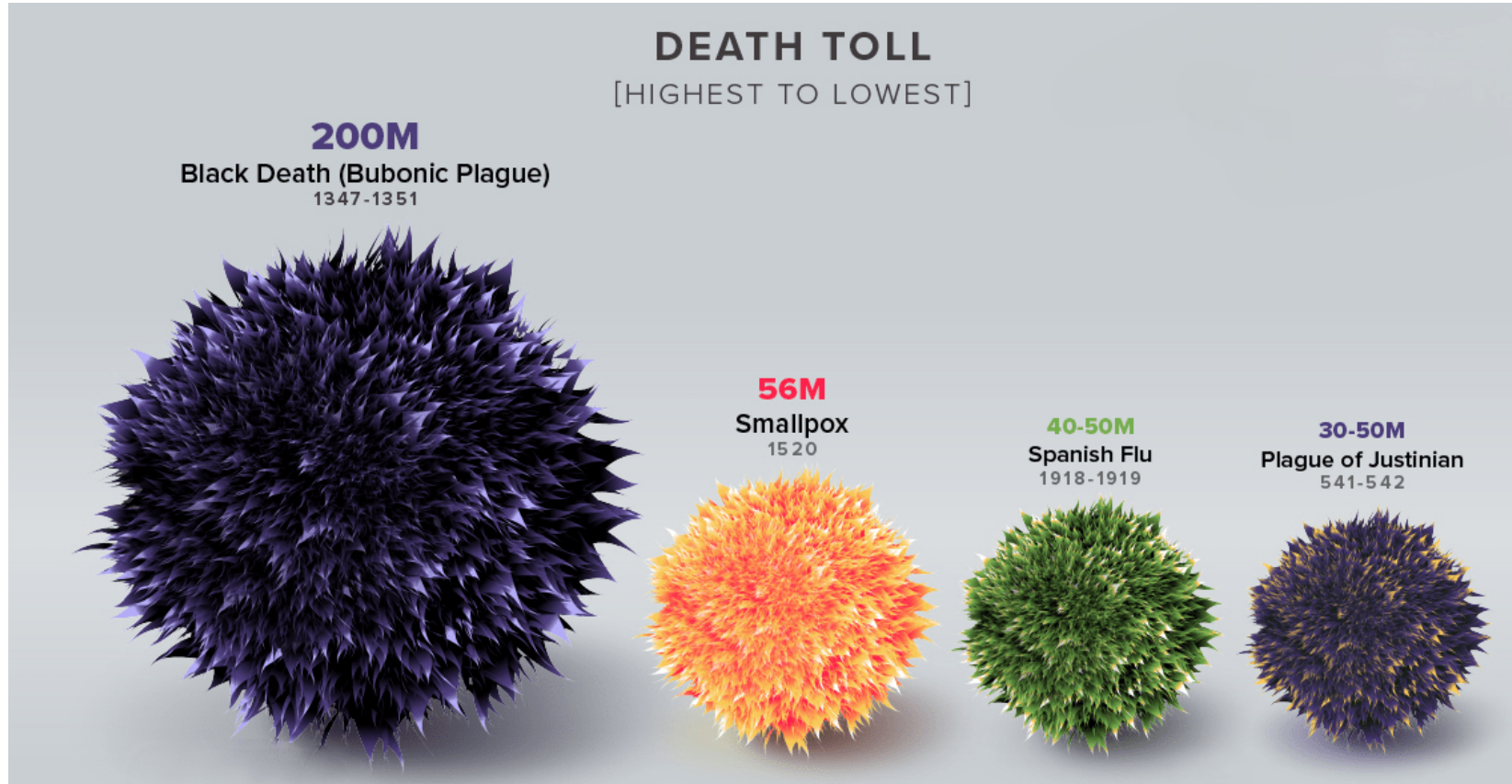
ISI Foundation

- Email: lorenzo.dallamico@{isi, unito}.it

- Note: lorenzodallamico.github.io/teaching
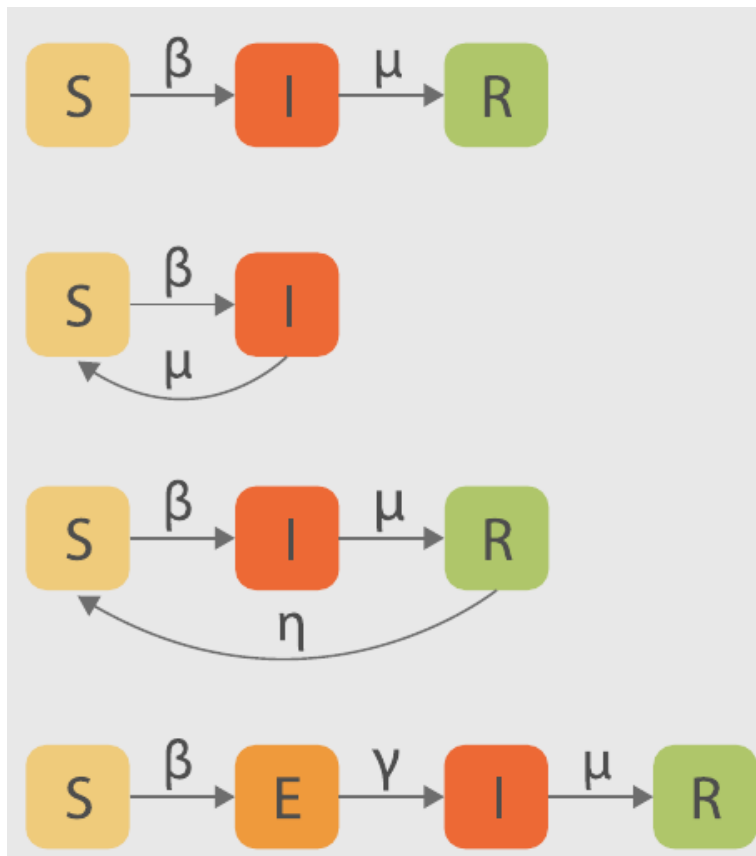
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The deadliest pandemic in history

DEATH TOLL
[HIGHEST TO LOWEST]

200M
Black Death (Bubonic Plague)
1347-1351

56M
Smallpox
1520

40-50M
Spanish Flu
1918-1919

30-50M
Plague of Justinian
541-542

The basic states of an epidemic

Some models
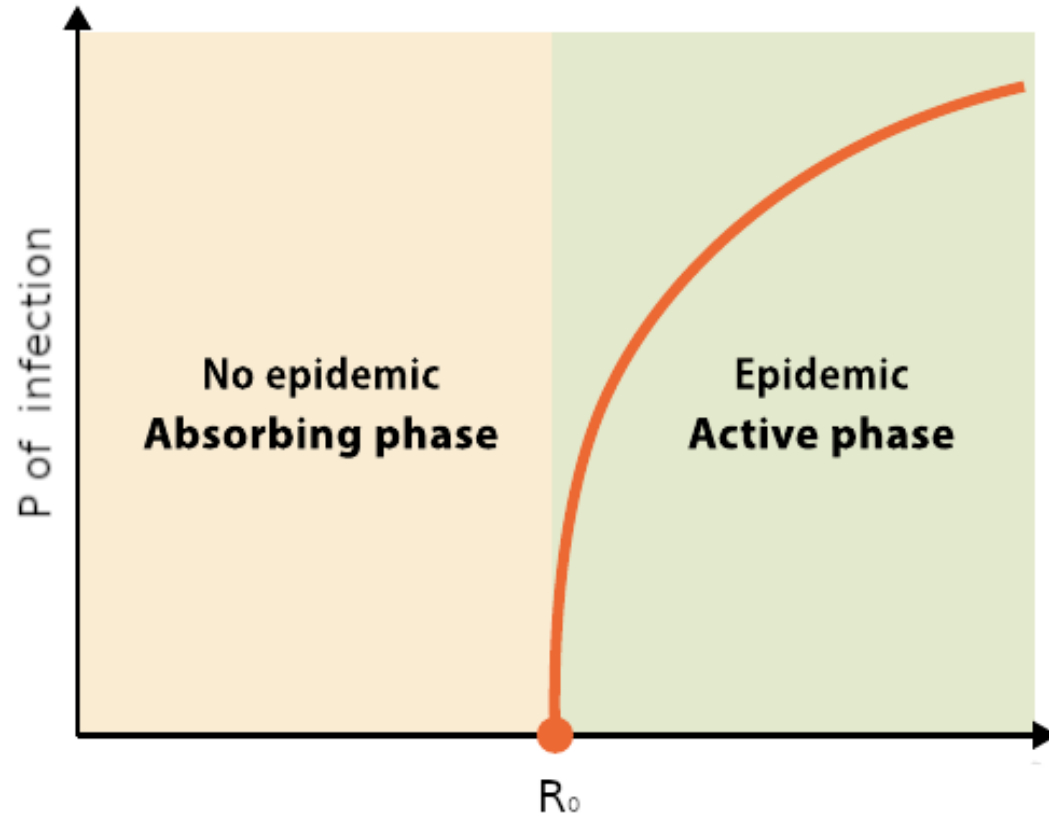
The reproductive number
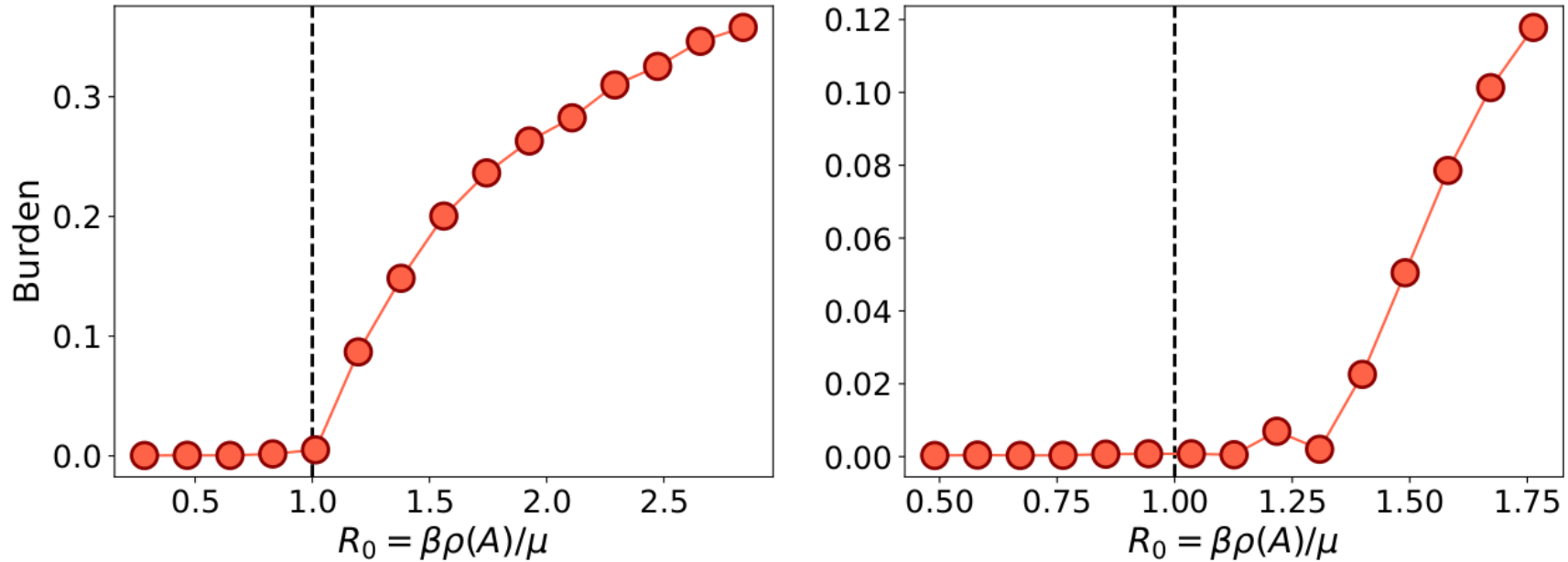

SARS
3.5

COVID-19
Omicron BA.1
9.0

The reproductive number can be interpreted as the average number of people that get infected by a person before recovering

The phase transition

NMF prediction

SIR on a dense (left) and sparse (right) graph as a function of the R0 obtained by NMF

Hubs propagate the virus