GERMAN FEDERAL INSTITUTE FOR RISK ASSESSMENT

15 YEARS
Science in the Service of Humanity

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Bundesinstitut für Risikobewertung

Social networks in the pig barn
implications for the infection dynamics of MRSA *and other infectious diseases*

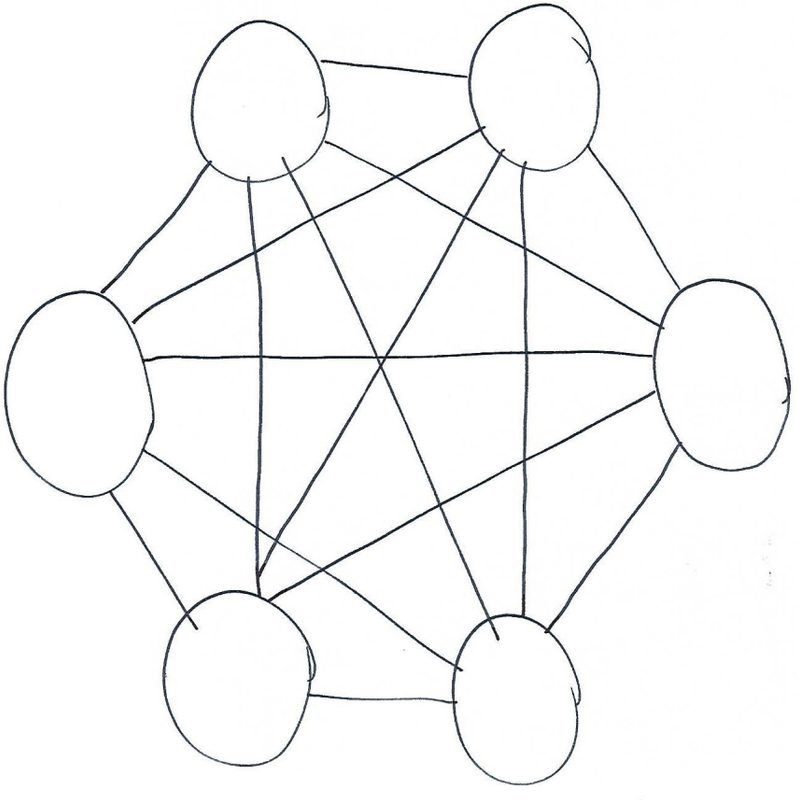
Thomas Selhorst

MRSA Methicillin resistant Staphylococcus aureus Characteristics

- S. aureus settle an persons
  - nasal atrium
  - throat
  - armpits
  - groin

without making them sick.

- Infection can occur when bacteria enter the body
- S. aureus may be resistant to antibiotics Methicillin and most other antibiotics
- Spreads livestock -> person -> person via direct (indirect) contacts



- contact rate is constant
  - in time
  - for all members of the population

$$\frac{dI}{dt} = \beta\, I\, S$$

Contacts between farms

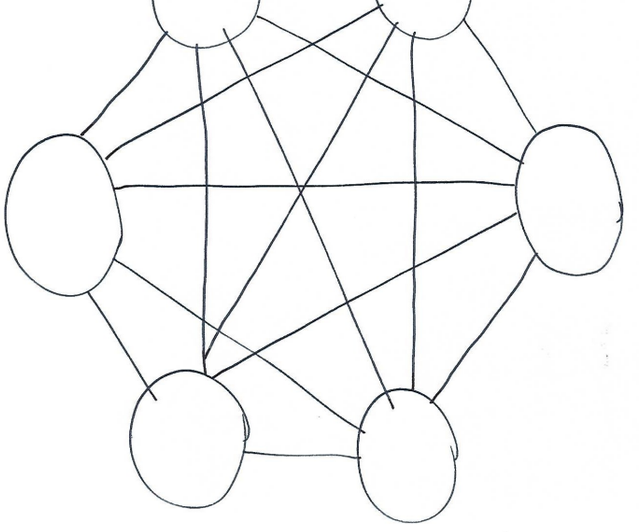
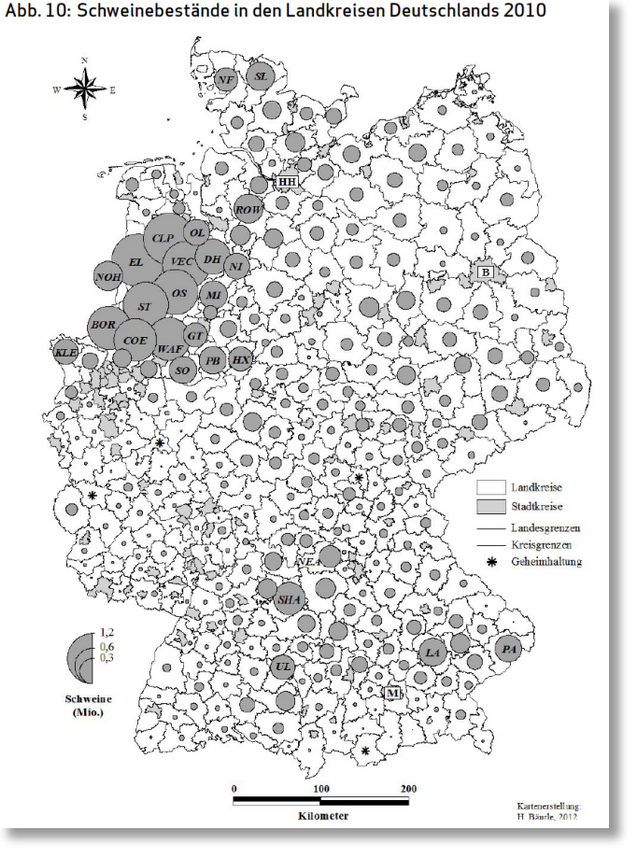
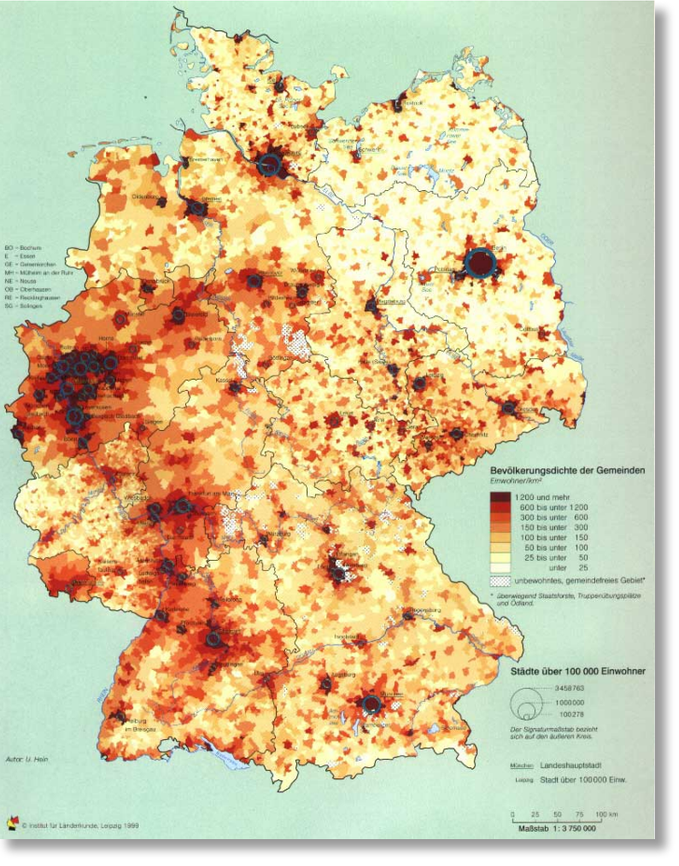
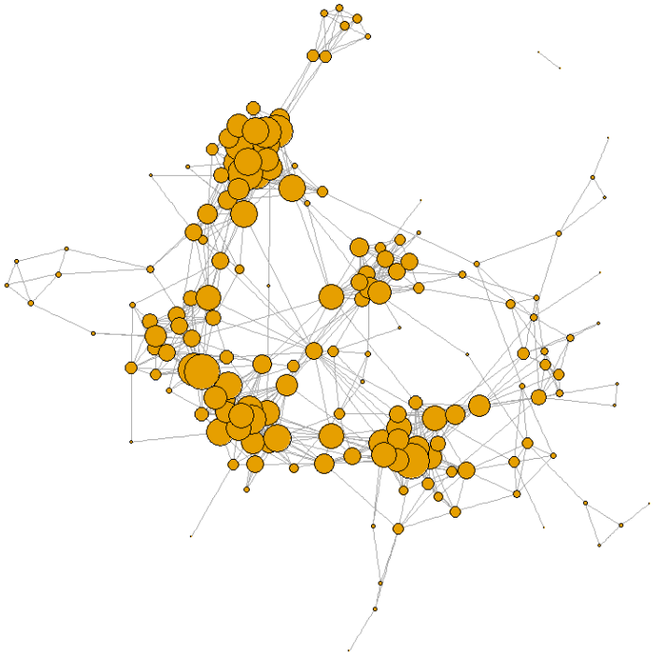


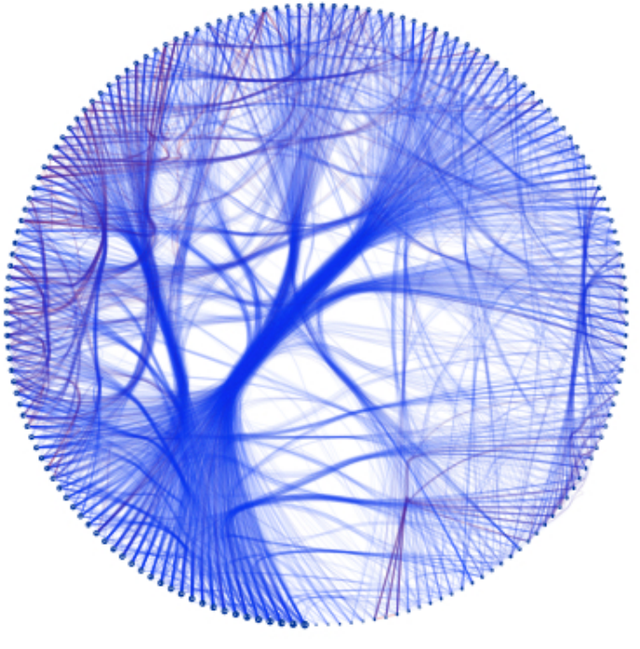
Abb. 10: Schweinebestände in den Landkreisen Deutschlands 2010



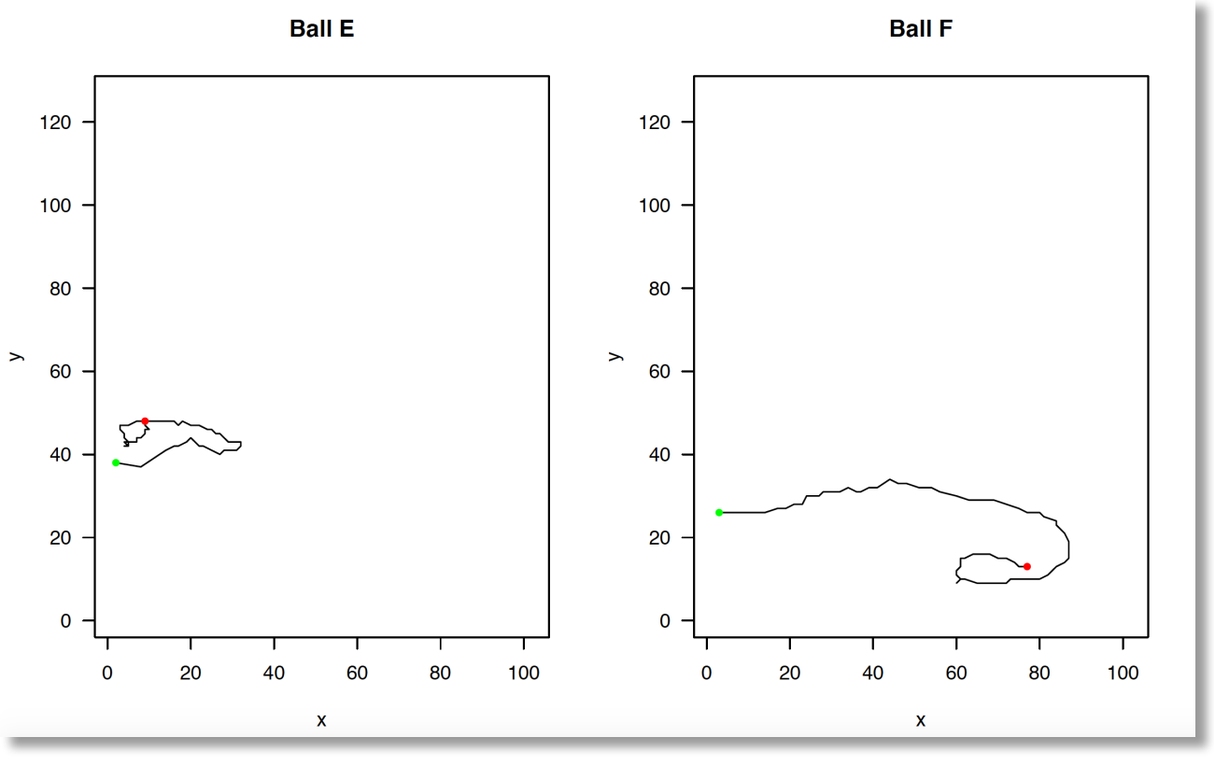


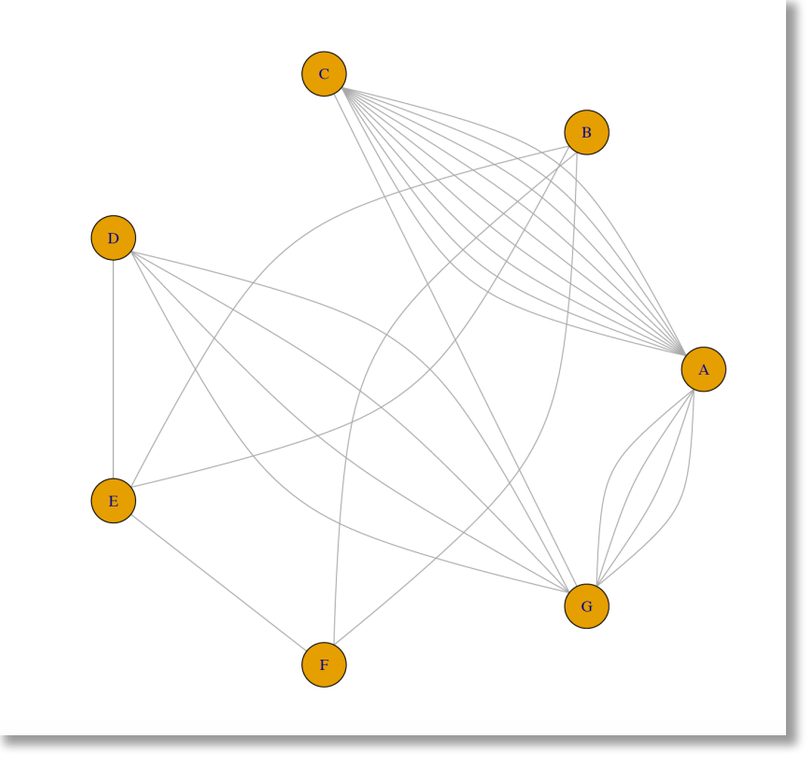
Contacts within a barn





contacts within a barn
Computer Vision proxy





Summary

- Modelling of infectious disease spread between and within farms likes to use lost of field observation data
- Modelling of infectious disease spread likes to to discover individual differences in order to propose optimized, adapted, “personalized” strategies for disease control
- Data are often not publicly available

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Thank you for your attention

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