

A web-based application simulating the spread PD after introduction in a naive population

Background, model framework and use

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Space–time modelling of the spread of pancreas disease (PD) within and between Norwegian marine salmonid farms



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What is a model?

- A simplified view of reality
- Include what is important to understand the system,
- Exclude unnecessary details
- Exclude the things we do not understand, or bypass it by the use of statistical associations



A very simplified reality, expressed as a mathematical relationship

Perfekt harmoni, form og funksjon.

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CO₂ Fra 103 g/km

Emission of CO₂



Fra 3,9 l/100km

Average consumption



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An experience based model



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Is the model good for use?

Compare the model performance
to observations from the real
world



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The PD model

- Experience based/empirical
 - The authors have used data to understand the relationships between different factors and the risk of infection
 - Predictive, scenario simulations

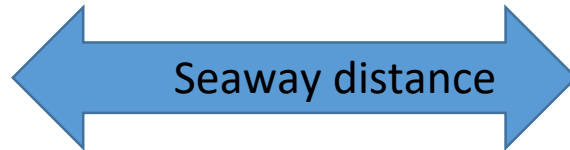


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The PD model

- An infected site produce virus
 - The amount depends on the number of fish/biomass at the site
- A susceptible site receive virus
 - The susceptibility depends on the number of fish/biomass at the site



The PD model

- An infection produces a disease
 - The amount of infection on the fish/bird
- But also other factors like seasonal dynamics, temperature, shared company, etc
- Also includes the internal development
- receive
- y number at the site



The PD model, multiple sites

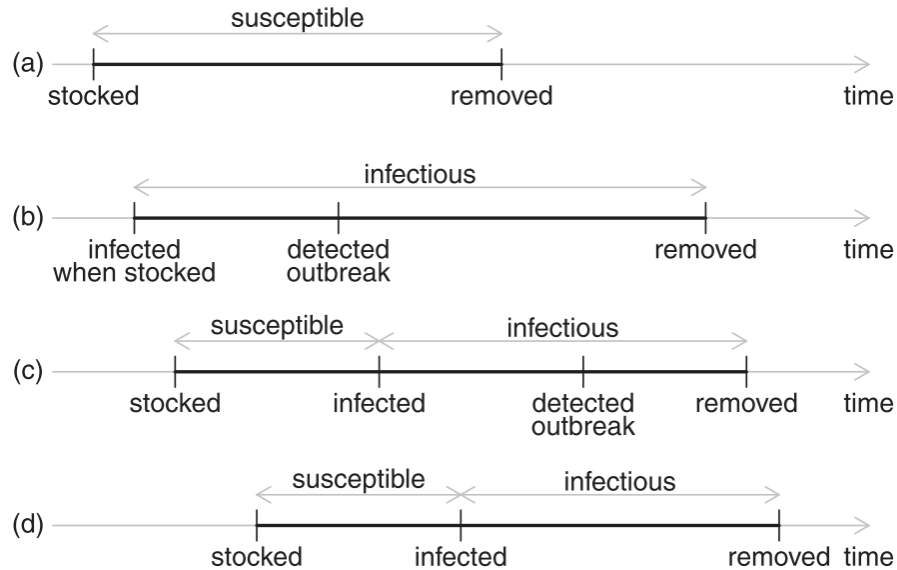
- May be infected from several sites
- Calculate infectious contact with all surrounding sites



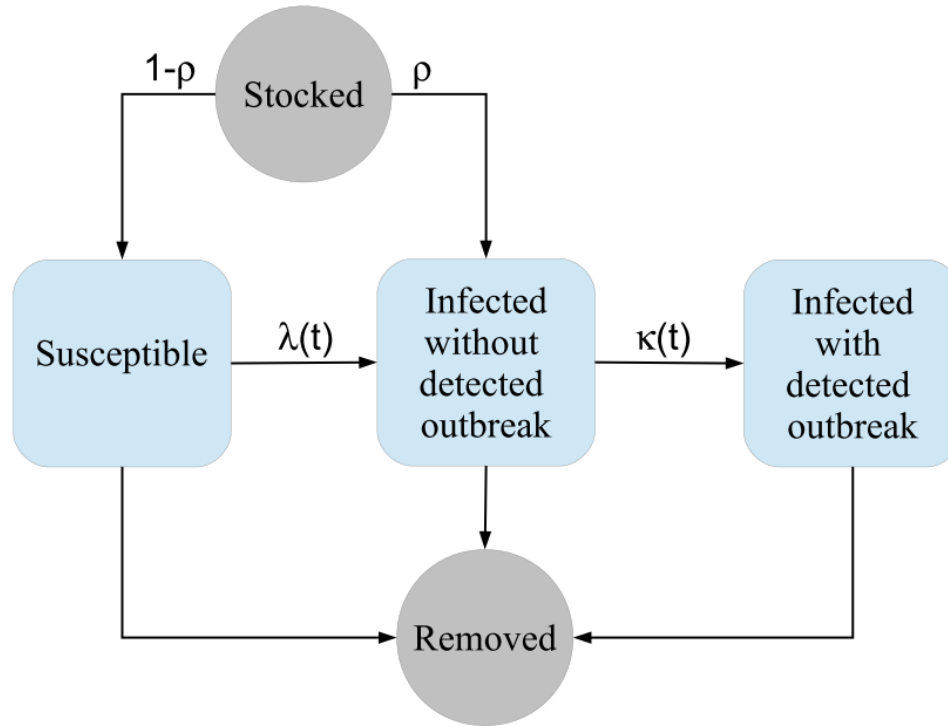
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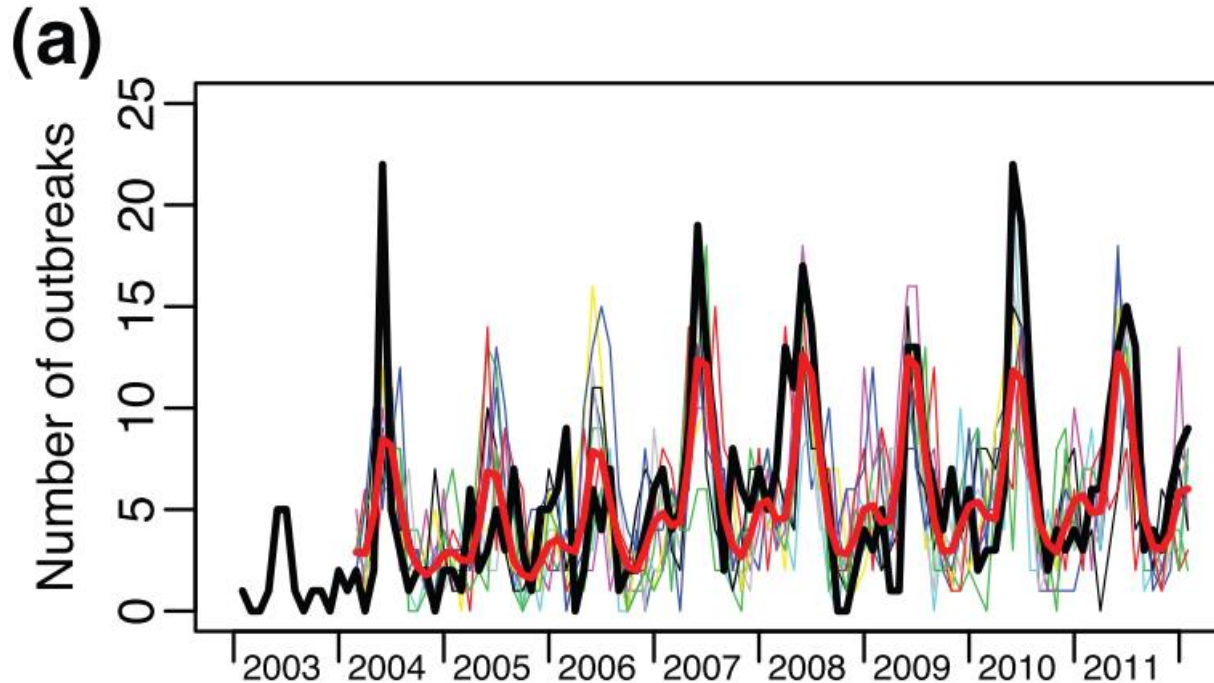
SIR model



SIR model



Validation



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The application, data input



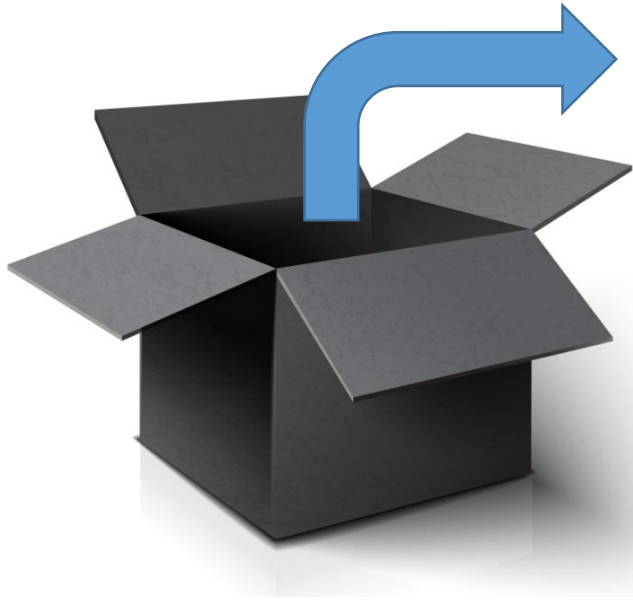
Whether a site gets PD
(The rest of the
information will be
included in the tool)



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The application, output



Probability of infection in surrounding sites, and uncertainty

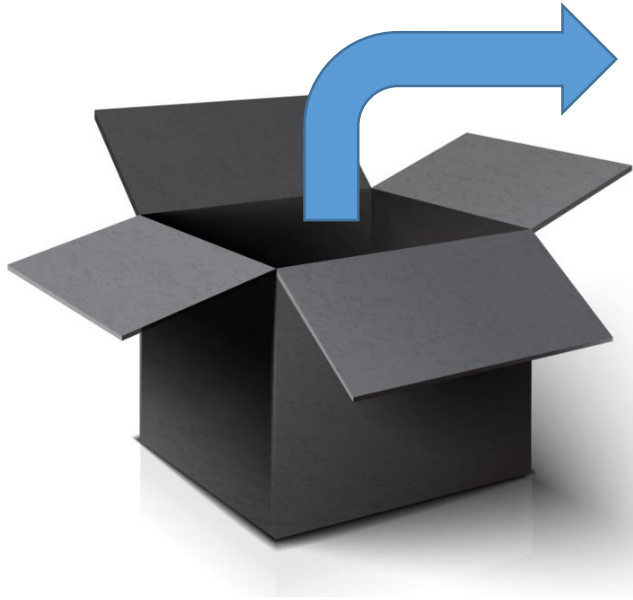
Extrapolate the development of the disease in the area over time.



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The application, output

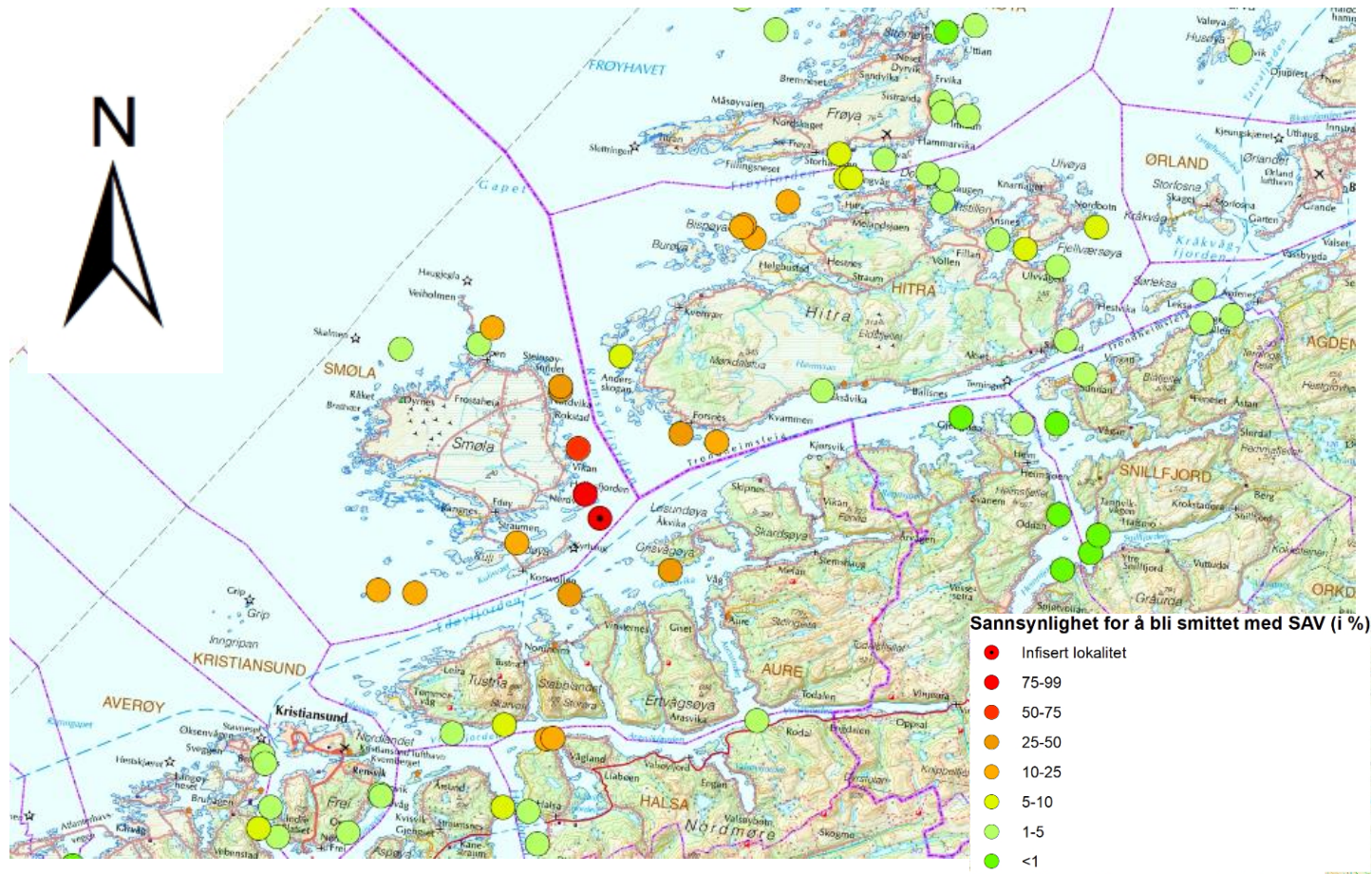


- Development of the disease 6 months into the future.
- Will the disease establish in the area?
- Different scenarios



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Thanks



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