

Russian Influenza in Sweden

The Russian Influenza in Sweden from a GIS Perspective

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Infectious Agent or Miasma?

Theories dating from the days of Hippocrates (460-377 BC) say that diseases are disseminated from miasma (bad or polluted air). In the 19th century many doubted these theories, claiming disease spread was rather caused by infectious agents.

Dr Linroth's Study

The Russian Influenza of 1889 reached Sweden in November. It spread all over the country. In order to clarify whether it was caused by an infectious agent, or by miasma, Dr Klas Linroth, Sanity Inspector in Stockholm, in a retrospective study tried to map the spread of the disease.



All Swedish doctors were asked to report on the influenza.

- When was the first case in your district?
- When did the influenza reach its peak?
- Percentage infected?

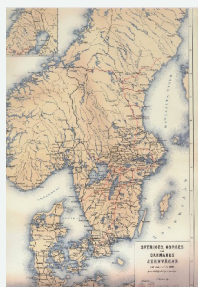


Responsible???

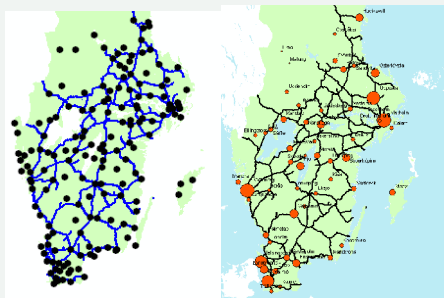
GIS for Better Analysis, Understanding and Communication

Dr Linroth's collected information has been converted to GIS format along with information on the 1890 railroad network of Sweden.

A geodatabase has been built to store spatio-temporal information. Map layers can be displayed individually or in video sequences.



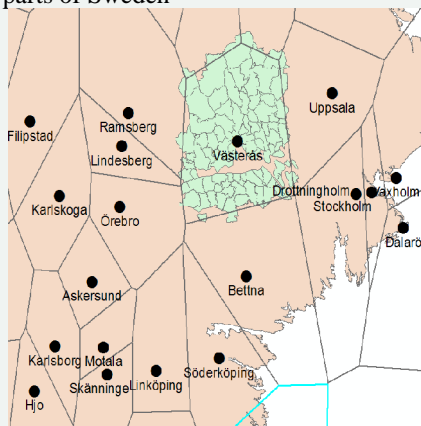
Last week of 1889



First infected

Number of infected

With population data on all Swedish parishes Thiessen polygons were created to predict the number of infected in all parts of Sweden

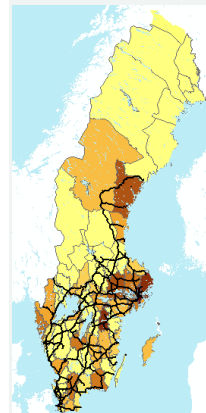


Conclusions

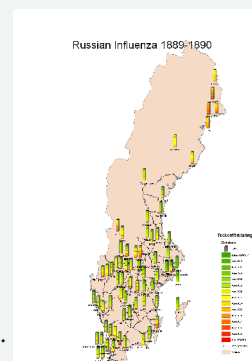
Dr Linroth concluded that the Russian Influenza was indeed not caused by miasma, as the influenza was spread in all directions and along the the railroad network.

With modern GIS techniques we have an excellent opportunity to collect and organize spatial information for faster and better prediction of new pandemic threats. Via Internet map servers we can easily communicate a common picture, between organisations concerned and increasingly important - to the public.

Number of infected persons in different areas colorcoded. Darker colors mean more infected persons. Last week of 1889. The railroad network is in black.



This map shows how the disease was spread all over the country. Different colours show intensity week by week in a rainbow diagram.



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