Vincent Auvigne is the OpenHealth Institute Chief Scientist. With a background of veterinary science (DVM, Nantes, France 1989) and public health (MPH, Madrid, Spain 2010), he has been facing for 24 years the challenge of data analysis, data visualization and scientific communication, as a manager of Animal Health schemes and as an epidemiology consultant. He has a special interest for spatial analysis.

The OpenHealth program groups an Institute that develops general interest innovating studies based on health data analysis in partnership with universities and life science research organizations, and a private company specialized in processing health data. The Institute publishes health indicators for the general public and health stakeholders in France on a not for profit basis.


Isodemographic Hexagonal Cartograms from OpenHealth: An Innovative Design for Health Data Mapping

In this presentation we aim to present a new design and application idea and to summarize lessons learned in a health application of spatial information.

The OpenHealth Cartogram concept is a powerful and innovating design used to map and analyze epidemiological phenomena. This is an efficient tool to communicate loud and clear the phenomena to any public. The objective here is to enhance the reliability of visual perception of the burden of pathology or other health phenomenon.

It is based on the use of the following features:
• Isodemographic cartograms to better perceive the burden of the studied phenomena on populations
• Space-time smoothing algorithms to allow the display of major trends and local phenomena at the same time, regardless of administrative borders.
• Hexagonal grids for the visual perception not to be disturbed by variation of size between administrative units.
• Animations to visualize temporal dynamics
• Consistent representations of data whatever the data source
Figure 1: Application of the design to a US data set

This concept has been set up on the OpenHealth.fr platform. Open Source software are used. This platform monitors health indicators for the French population in real time using big data. Compared to classic maps, OpenHealth cartograms enrich the big data collection know-how.

Figure 2: Impact of smoothing parameter on data visualization
INTENSITY OF ALLERGIC CONDITIONS
IAS Advanced Health Indicator® - Daily measure

26/05/2015

Index Allergies
National: 144

Local:
- >160
- 125 - 140
- 110 - 125
- < 110

IAS® Allergies: real-time monitoring of allergies

IAS® Allergies analyses the levels of allergic diseases in France day-to-day. It is particularly suited to monitoring spatial-temporal changes in seasonal allergies. From cypress in February up to ragweed in August, changes in allergic diseases can be seen on a daily basis throughout the year.

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