

GeoConnections

Geomatics and Public Health

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Canadian
Geospatial
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Canada 

Applying location-based tools to public health practice in the 21ST century

Today, public health professionals can take advantage of the kinds of technologies that underpin Google Earth™ and other popular online mapping applications and services.

Known as geomatics, these underlying technologies bring together surveying, mapping, remote sensing, geographic information systems and the Global Positioning System. Geomatics allows you to create a detailed picture of the physical world and your place in it.


At the heart of geomatics lies location-based, or “geospatial,” information. By capitalizing on such information as maps and satellite images, public health practitioners can prevent disease, prolong life and improve the health of Canadians. It can also help them deal with disease outbreaks and understand how variables affect health.

You can find examples of location-based public health information everywhere:

- program planning and evaluation
 - disease outbreak investigations
 - disease and injury surveillance
 - emergency preparedness
 - resource allocation
 - intervention program implementation
 - evaluation, public awareness and policy activities

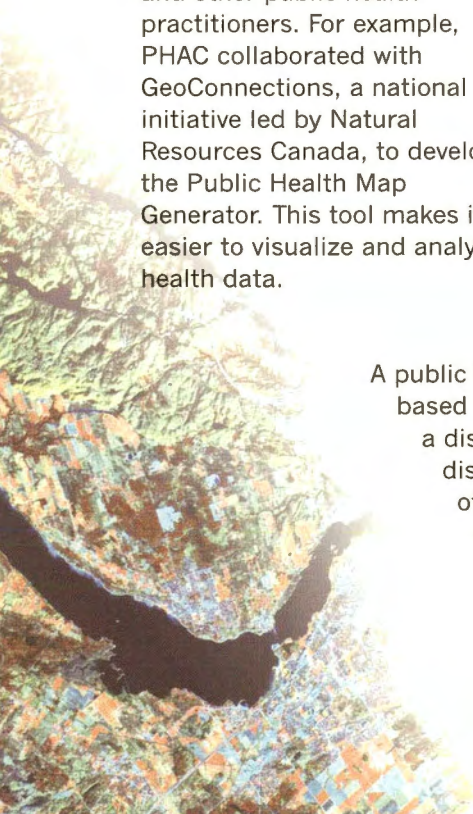
Health analyses reveal even more when they include such variables as socio-economic status, age, education, gender,





culture and family medical history, all of which determine Canadians' health. You can look at each of these variables according to location.

Public Health Map Generator reveals a path to better health care



The Public Health Agency of Canada (PHAC) uses location-based information to assist nurses, physicians, epidemiologists, health planners and other public health practitioners. For example, PHAC collaborated with GeoConnections, a national initiative led by Natural Resources Canada, to develop the Public Health Map Generator. This tool makes it easier to visualize and analyse health data.

“With an enhanced visual perspective, health professionals can quickly see patterns of diseases as they occur in various places across the country,” said Mr. David Lewis, Team Leader with the Public Health Agency of Canada. “This information enables public health professionals to make better evidence-based decisions for targeting responses in affected areas.”

A public health agency that uses location-based information to map the spread of a disease will be prepared to predict the disease's physical course and its rate of spread. And health officials will be better equipped to deal with the disease and minimize its effects than they would be without these resources.



Geomatics and public health: more than 150 years in the making

Geomatics is the science and technology of gathering, analysing, interpreting, distributing and using location-based information. But the idea of using such information to improve public health isn't new.

In 1854, Dr. John Snow plotted cholera deaths on a map of the Soho district in London, England. He found that these deaths clustered around a water pump on Broad Street – a discovery that helped isolate the pump as the source of the cholera bacteria. Dr. Snow's crude map stands as one of the earliest employed to understand the spread of disease. Many regard his cholera study as the founding of epidemiology.

Today, medical geographers and health practitioners commonly use location-based information to understand how diseases spread. It offers incredible precision and accuracy and more analytical power than Dr. Snow's cholera map afforded him.

Leveraging geomatics to improve public health

With guidance from the public health community, the national GeoConnections program is focusing its efforts on supporting decision-makers in two priority areas: population health surveillance, and health emergency response and inter-emergency planning.

Population health surveillance

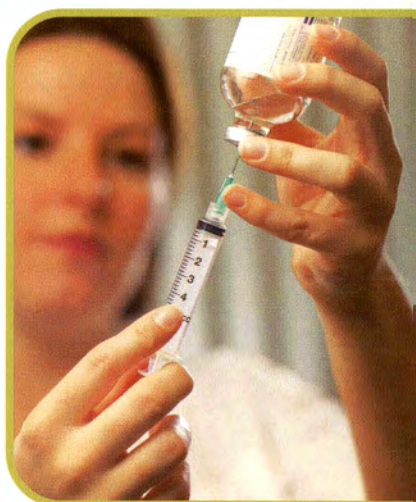
To make informed decisions, public health professionals need to share information not only with one another but also with others outside the health community. That is because factors beyond the health care sector affect health.

All social, economic and environmental health factors can be correlated with health status. You can use location-based information to integrate these factors with health-specific data. This integration permits you to better understand the complex relationships between many factors and the impacts of planning and targeting programs.

In short, you can use location-based health factors and health status information to

- correlate variables
- identify priorities
- gain critical insights into public health issues and solutions

These insights will better equip you to devise strategies to improve health.



Health emergency response and inter-emergency planning

You can also use location-based information to forecast disease outbreaks and then track them wherever they spread – across regional or provincial/territorial jurisdictions or even international borders. This tracking enables you to identify vulnerable populations and plan for contingencies. And during emergencies, you can use location-based information to assess public health risks and mobilize emergency responses.



Moreover, location-based information can help you create and send reports, advisories, alerts and warnings at any level – local, national and international. As well, you can use it to make decisions on other health-related emergency actions, such as whether and when to initiate the production of a vaccine.

But don't wait until a major health emergency strikes to begin using location-based information. Start by acquiring the location-based information tools you need. Ensure that your staff are taught how to use these tools. Then make sure they use the tools often – in daily surveillance and outbreak activities and in dealing with small emergencies. This hands-on familiarity will prepare you and your staff to act swiftly and effectively during major emergencies – when lives could be at risk.

In other words, make location-based information second nature now and integrate it into your health-emergency response planning. You will benefit from it on an operational basis *and* can take full advantage of this resource when it matters most – during an emergency.

GeoConnections – tying it all together

GeoConnections is a national partnership and funding initiative led by Natural Resources Canada. This program provides Canadians with location-based data, tools and services over the Internet.

First launched in 1999, GeoConnections was formed as a national collaboration to develop an online resource called the Canadian Geospatial Data Infrastructure (CGDI). In Canada's 2005 federal budget, GeoConnections was renewed for an additional five years to maintain, operate and expand the CGDI in four key areas:

- public health
- public safety and security
- environment and sustainable development
- matters of importance to Aboriginal peoples

GeoConnections meets its objectives largely by co-funding projects. The projects encourage the program's four key audiences to collaborate with the Canadian geomatics community in developing solutions for decision-makers.

For example, in the Public Health Map Generator project referred to earlier, GeoConnections contributed \$80,000 to PHAC. This enabled the agency to configure data sets for the application, create user documents, and install and configure the application for its launch.

For more information on GeoConnections funding opportunities, visit www.geoconnections.org.



The CGDI: a foundation for data sharing

The CGDI consists of the technologies, policies, applications, services and tools needed to promote the sharing of location-based data. These data may be exchanged between and throughout all levels of government, the private and non-profit sectors, and the academic community.

Today, GeoConnections' goal is to grow the CGDI into an effective resource that helps decision-makers in its four key areas tackle some of Canada's most pressing challenges. To that end, the program is striving to ensure that the public health community can take full advantage of the CGDI for the two priority areas described earlier: population health surveillance, and health emergency response and inter-emergency planning.

How can you take advantage of the Canadian Geospatial Data Infrastructure?

As an online resource, the CGDI lets you discover, access, map and share location-based data. For example, the public health community can use the CGDI to

- **discover sources of local and provincial/territorial geospatial data and services**
- **supply national road-map layers and other layers of base data**
- **explore standards for data publishing, mapping and exchange**
- **learn about policies designed to facilitate data sharing**



Contact us

If you have questions, e-mail **info@geoconnections.org**.

All funding opportunities are listed at **www.geoconnections.org**.

You can also sign up for the electronic mailing list at **www.geoconnections.org/en/subscribeForm**. You will receive news about GeoConnections and the CGDI. You will also be informed about upcoming workshops and training sessions. Plus, you will be notified as soon as a new opportunity or other relevant item is posted. Subscribe today and stay in the know!

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