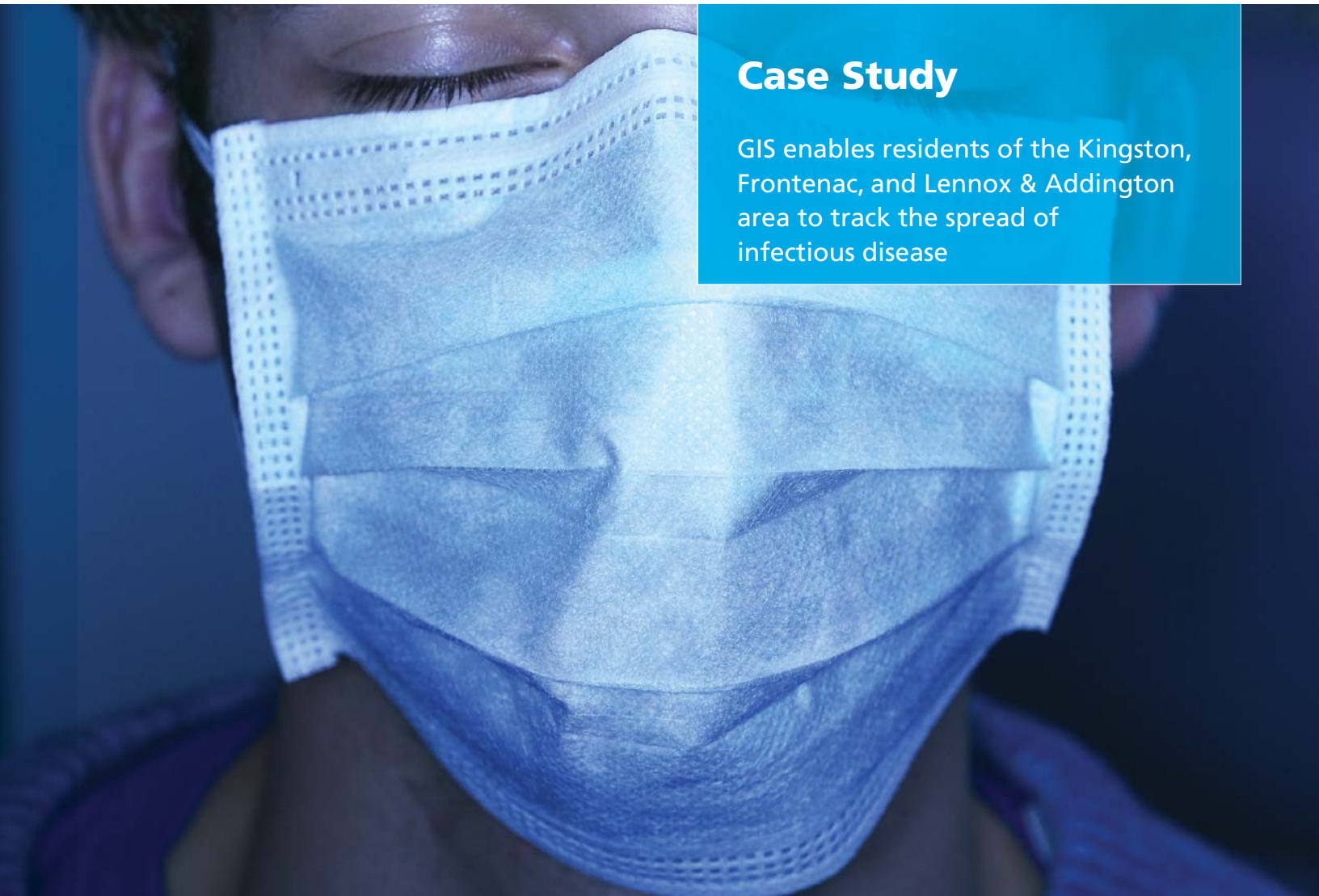
HEALTH CARE

ESRI Canada



Case Study

GIS enables residents of the Kingston, Frontenac, and Lennox & Addington area to track the spread of infectious disease

GIS delivers real-time outbreak and disease surveillance

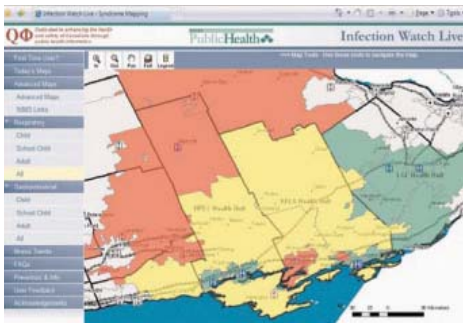
In response to growing alarm over the possibility of infectious disease in Canada, an innovative Web mapping application was developed in collaboration with Kingston, Frontenac and Lennox & Addington Public Health (KFL&A) to monitor real-time outbreak and disease surveillance. Making Emergency Department Syndromic Surveillance (EDSS) data from local hospitals available to the public promotes peace of mind and serves as an effective early detection resource to mitigate disease outbreaks.

Challenge

In 2004, Dr. Kieran Moore of Queen's University collaborated with Kingston, Frontenac and Lennox & Addington Public Health (KFL&A) to develop an Emergency Department Syndromic Surveillance (EDSS) program that would enable real-time, outbreak and disease surveillance for the region's nine local hospitals. The original EDSS program was created by adapting an existing tool – the University of Pittsburgh's Real-time Outbreak and Disease Surveillance (RODS).

To modify the program for public consumption, KFL&A needed to find a way to mask sensitive data and push results out to the public through an external-facing Web tool. The application also required a user-friendly interface that could be easily accessed by healthcare providers, educators, employers, parents, public officials and community members.

KFL&A's Web mapping site allows visitors to quickly scan respiratory and gastrointestinal maps and get a snapshot of the region's health status. Visitors can see each infection type by age break down as well as by total.



The Infection WATCH Live site is a dynamic mapping environment that allows users to interact with a map of interest.

"The establishment of a surveillance system using data from hospital emergency departments has been an invaluable tool for us to identify infectious disease risks early on."

Dr. Ian Gemmill
Medical Officer of Health
KFL&A Public Health

Solution

KFL&A collaborated with ESRI Canada, the Sault Ste. Marie Innovation Centre and Infonaut to build the **Infection WATCH Live** Web application. The application sits on top of the RODS framework and leverages ESRI's ArcGIS Server to aggregate data and push it out to the general public through the Web.

The Sault Ste. Marie Innovation Centre supplied spatial data that was integrated with KFL&A hospital intake data, along with data obtained from the Canadian Geospatial Data Infrastructure (CGDI) and then populated into the new application.

The datasets focus on respiratory and gastrointestinal complaints as these illnesses are rapidly transmitted and pose a significant burden to community health services. Through ESRI technology, respiratory and gastrointestinal visit data is evaluated based on seasonal, demographic and geographic norms to find trends and predictors for outbreaks. The results are then displayed as areas of high activity in red, elevated activity in yellow and normal activity in green.

Benefits

When it launched, Infection WATCH Live received 1,000 hits and now averages over 500 per day. By leveraging GIS to make this data available through an intuitive, public-facing Web site, everyone from family physicians to school and child centre administrators can make more informed health decisions and proactively participate in mitigating the spread of infection. Members of the general public can also make informed decisions that might include avoiding public areas during an outbreak.

Users have access to daily maps that provide a snapshot of the health status across the region, advanced maps that let them interact with the data, and illness trends that allow them to build their own customized, animated, historical maps. Users can also publish maps for inclusion in other GIS applications.

The application's visual component makes it easy for public health professionals to identify triggers that alert them to potential problems early on. The data also helps experts develop predictions about future outbreaks.

Moving Forward

The Infection WATCH Live team believes that the application will serve as a model for other Canadian cities to inform the public, limit the spread of disease and alleviate emergency department crowding.

ESRI Canada

esricanada.com

ESRI Canada Limited
12 Concorde Place
Suite 900
Toronto, ON M3C 3R8
T: 416-441-6035
F: 416-441-6838

Customer Service
1-800-447-9778
info@esricanada.com

Technical Support
1-877-441-0337
support@esricanada.com

Founded in 1984, ESRI Canada provides enterprise geographic information systems (GIS) solutions that empower businesses, governments, and educational institutions to make timely, informed and mission-critical decisions by leveraging the power of maps. The company distributes the world's leading GIS software from ESRI, Telvent Miner and Miner, Azteca Systems and other technology partners. Headquartered in Toronto, the company serves over 10,000 customers from 16 regional offices across Canada.

British Columbia
Vancouver: 604-682-4652
Victoria: 250-383-8330
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