Esri News
for Health & Human Services
Summer 2013

Improving Rural Clinical Outreach with GIS

Gundersen Health System Provides Tools for Outreach Clinic Decision Making

To say Gundersen Health System depends on in-depth information and solid relationships would be an understatement.

Based in La Crosse, Wisconsin, the organization consists of a 325-bed teaching hospital with a level II trauma center and nearly 50 locations—affiliate hospitals, regional clinics, behavioral health clinics, vision centers, pharmacies, air and ground ambulances—all spread across largely rural western Wisconsin, northeastern Iowa, and southeastern Minnesota.

"For more than 20 years, we've been doing outreach," said Robert M. Trine, Gundersen's senior vice president for strategy. "And we've developed relationships with independent doctors throughout our three-state area."

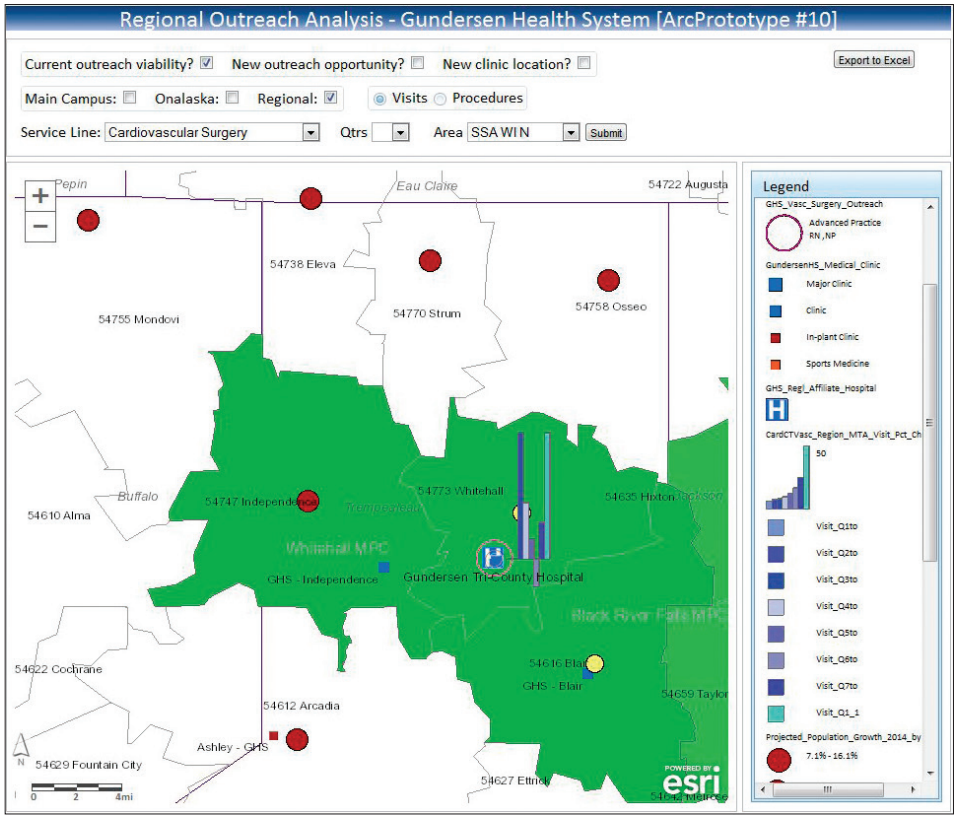
For years, Gundersen has been working to integrate Esri technology into its outreach services. The health system seeks to provide leaders and planners with visual map and data displays that aid decision making on the placement of new outreach services and to assess the business performance of existing sites.

↑ Gundersen Health System's 325-bed teaching hospital with a level II trauma center in La Crosse, Wisconsin. A new in-patient mental health unit and biomass boiler sit in the foreground.

"From a senior leadership perspective, mapping is obviously a visual tool, and it's very helpful in getting people on the same page around certain topics that are geographically dependent," Trine said.

Gundersen's prototype GIS outreach is helping the health system respond to rural health care needs, further enhancing the health system's capability to deliver the best-quality, least expensive care.

"Decision analytical tools are becoming invaluable to health care organizations," explained Deb Rislow, RN, MBA, CIO, and vice president at Gundersen Health System. "A system that integrates our internal, as well as multiple sources of external, data—one relevant to our growth strategy and our ability to utilize that data in a graphical format—has been invaluable to senior leadership. IT investments in such systems will continue to expand over the next several years."



↑ Gundersen Prototype Outreach Analysis Map Server Screen Shot Showing Percent Changes in Quarterly Outreach Visit Activity, Annual Patient Volume, and Project Population Growth in a Two-ZIP-Code Affiliate Hospital Service Area

Tough Geography, Economy, and Competition

A key motivation has been strong competition from other health systems to establish clinics in small-town locations. Surrounding Gundersen are the likes of the Mayo Clinic, the University of Wisconsin, the University of Iowa, and the Marshfield Clinic.

"If you're not delivering the best care and working toward zero mistakes, you're not going to survive in a highly competitive region like this," observed GIS specialist John P. Gabbert. "The Gundersen ethic in its Norwegian Lutheran roots is to treat people like family, and you must be efficient, too."

According to Trine, cost-effective placement and use of outreach providers has become especially crucial in this era of declining health insurance reimbursement. Commercially insured patient populations dwindle as more retiring baby boomers apply for Medicare. Also, high unemployment has forced millions nationwide to seek government insurance such as Medicaid.

Another key factor is distance, Trine observed. Gundersen—like any large regional medical center—needed to identify and address the geographic access problems faced by patients living in rural locales far from services, a critical factor in a life-threatening emergency.

"In this cost-challenged industry, there's a need to get better at making those decisions so you don't duplicate services," Trine said. "You need to carefully pick locations for brick-and-mortar that facilitate access for this geographically dispersed population."

Gabbert described the region as a rugged island on the prairie. "It's not easy to get anywhere off the main roads, " he said. Rugged terrain created a need for outreach liaisons, who—nearly three decades ago—made contact with general practitioners seeking to refer more complex cases. "And those RN experts are still at it today. They began creating awareness of the need to communicate with the local physicians and to understand the markets." Gabbert said.

It's not quite as simple as in urban areas where it's pretty obvious where the hospitals and clinics should be, said Trine. "You have to think a little bit more deeply in terms of what's being covered and where are the gaps in service," he said.

Implementing the Project

To guide its GIS projects, Rislow decided early on that the GIS would need to interpret patient, create datasets, perform analysis, automate the analysis, and have built-in modularity that would extend to other projects.

Her thinking was that ArcGIS geospatial technology would help maximize finite resources with visual analysis of clinical demands and answer operational questions, leading to better allocation of resources.

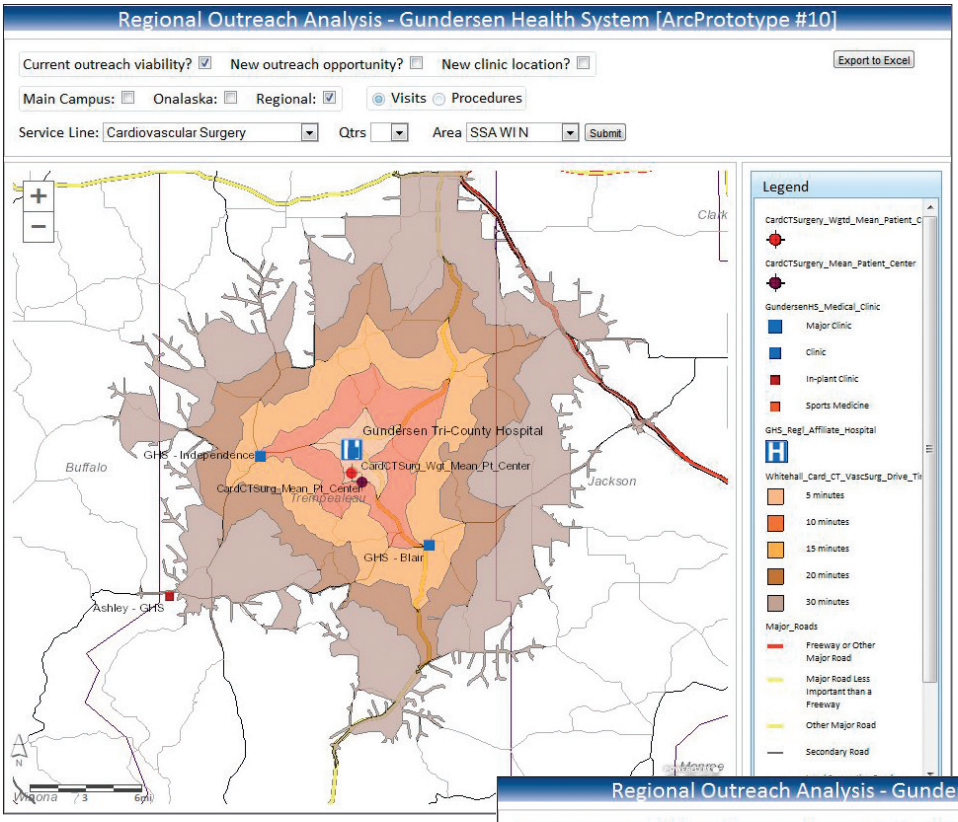
"The combination of geography and strong competition created the need to understand what's going on. And maps are the way," Gabbert explained.

In 2011, initial success prompted a decision by Gunderson officials to build their prototype system into a full-fledged IT project focused on regional outreach decision making. According to Trine, the system, which includes ArcGIS for Desktop, ArcGIS for Server, and Esri Business Analyst, had to answer three basic questions:

- Is the current outreach location viable?
- Where are good regional opportunities for new outreach?
- Where are the best potential clinic or service sites?

The answer to each question depends on how well rural outreach clinics serve patients close to their homes, Gabbert said. The GIS measures performance (i.e., number of patient visits, types of procedures, and patient charges).

At present, the system is still in prototype, but is slated for its first operational release in mid-October with a leadership review meeting scheduled for late October to mid-November.



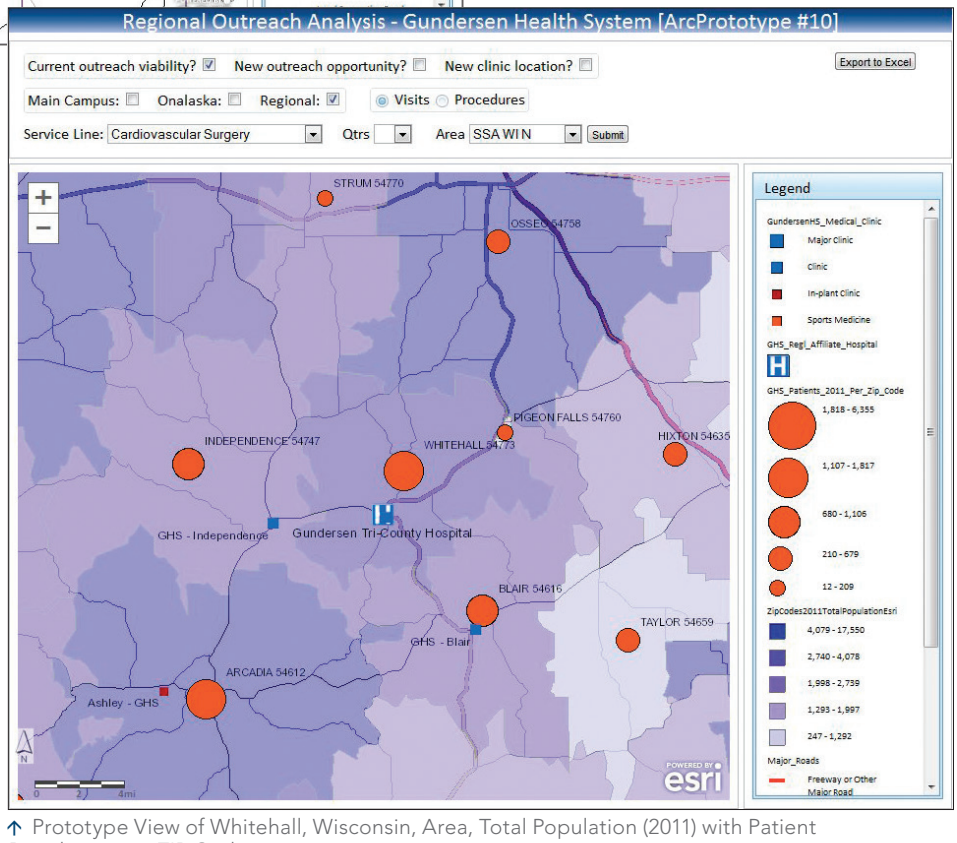
↑ Prototype Extended Average Patient Drive-Time Rings to Gundersen Tri-County Hospital and Clinic in Whitehall, Wisconsin, in a Three-County Region with Rugged Terrain

"We use our GIS to create static maps continually while we're developing this application," said Gabbert. However, as the GIS nears fully operational status, this workflow increasingly will shift from static maps and query-output spreadsheets toward Intranet mapping and exportable data tables, he said. Ultimately, the GIS project promises a less expensive, quicker, automated self-service data and mapping system for the use of Gundersen's end users—from the CEO and operational VPs to administrative directors and department chairs of individual specialty service lines.

ArcGIS will enable them to access graphically pleasing displays and easy-to-find data that will aid in identifying outreach gaps where new providers should be placed; in assessing clinical and business performance of existing sites; and in improving the planning and delivery of overall health care for rural patients.

"In this cost-challenged industry, there's a need to get better at making those decisions so you don't duplicate services. You need to carefully pick locations for brick-and-mortar that facilitate access for this geographically dispersed population."

—Robert M. Trine, Gundersen Health System, Senior Vice President for Strategy



↑ Prototype View of Whitehall, Wisconsin, Area, Total Population (2011) with Patient Population per ZIP Code

For further information, contact John P. Gabbert, Gundersen Health System, at JPGabber @gundersenhealth.org.

Visit www.gundersenhealth.org.

380 New York Street
Redlands, California
92373-8100

1 800 GIS XPRT (1 800 447 9778)
T 909 793 2853
F 909 793 5953
info@esri.com
esri.com

Offices worldwide
esri.com/locations

138886
ESRI5C11/13sp