



PART 1

HUMANS IN CRISIS

SOLVING PROBLEMS FOR HUMANS IN CRISIS HAS BEEN A recent rallying point for health and human services professionals. GIS provides a framework for crisis response—to organize data geographically, receive real-time updates, communicate information to stakeholders, deploy tactics, allocate resources, and keep decision-makers and the community informed.

Prepare for health emergencies

Health emergency preparedness involves extensive planning for a wide range of contingencies, including escalating operational support and shifting strategies that focus resources where and when they are needed most. GIS helps users quickly understand the common operational picture and provides tools to support the framework for crisis response.

Track disease

Monitoring diseases and conditions that can cause serious public health threats is critical to safeguard and build healthy communities. Tracking the source and spread of a disease or a pandemic such as COVID-19 can be enhanced by adding location and demographics. Location data tells a more complete story that can help communicate patterns and provide insight into mitigating needs.

Reduce homelessness

The homeless crisis requires a modern, integrated, multidisciplinary approach. To address this social problem, we must consider housing people who experience homelessness, reducing disease in encampments, connecting people to services, understanding the needs of communities of color, and identifying root causes. Because location data connects these disparate factors, GIS provides a unique view into building effective policy and maximizing resources.

Combat vector-borne disease

Protecting the public from vector-borne disease requires proactively reducing, monitoring, and controlling vector populations. GIS provides a foundation from which to support the end-to-end workflows, from identifying source points and dispatching crews and materials to performing analysis, informing management, and keeping the public informed.

Address the opioid crisis

The opioid epidemic constitutes a state of emergency in many places. GIS is a proven technology that benefits human services, health organizations, and law enforcement. Mapping and analyzing their data together shows a crisis that requires local governments to look for insights, pinpoint the sources of the problem, and deliver effective response plans and allocation of resources.

GIS in action

This section will look at real-life stories about how health and human services organizations use GIS to count the homeless, battle infectious disease, understand the opioid crisis, and more.

DATA AND SMART MAPS ELEVATE HUMAN SERVICES

Snohomish County, Washington State

IN MID-JANUARY 2020, A MAN IN SNOHOMISH COUNTY, Washington, was dubbed “Patient Zero” of COVID-19 in the United States. The diagnosis set off a countywide response effort.

Officials scrambled to understand what was then a new threat and focused on vulnerable populations, including the area’s unsheltered population. As time went on and the true nature of the crisis became apparent, the county’s solution helped reach hundreds of homeless people in need of shelter, essential resources, and medical services.

The work started in March 2020 when Alessandra Durham, a senior policy analyst with the Snohomish County Executive’s Office working in the Snohomish County Emergency Coordination Center, created the SnoCo Agencies for Engagement (SAFE) team to conduct outreach efforts. The SAFE team is composed of physicians, community paramedics, social workers, and law enforcement officers. The team spends time visiting unsheltered people to assess needs and connect to needed services.

To ensure success, the team took a targeted, data-driven approach supported by advanced technology. In the field, the SAFE team began using mobile apps powered by location intelligence from the county’s GIS to identify exactly where specific services were needed. The information was shared in real time with other teams in every appropriate department for planning and decision making.

“A lot of times, we’ll know what to do to help either mitigate or resolve issues, but having accessible real-time data has been really helpful in effectively deploying very limited resources,” said Durham.

“Utilizing GIS has really helped us to better inform and target where we deploy evidence-based practices.”

Becoming a data-driven county

In 2018, the Snohomish County Human Services Department received a federal Data-Driven Justice Initiative grant. Launched in 2016 under President Obama, the initiative was designed to break the cycle of over-incarceration of vulnerable populations by aligning justice, health, and human services systems around real-time data. The goal was to identify frequently incarcerated people and effective ways to divert them away from the justice system and into community-based services and treatment providers.

Nate Marti, planning and evaluation division manager of the Human Services Department, was one of the key architects in developing a data-driven approach to community outreach. He says the grant opened the door for Human Services to begin using location intelligence for the first time.

“The county has had experts using GIS products for years, but mainly within other departments,” Marti said. “Prior to 2018, human services really never touched the geospatial analysis that we’re using today.”

One of the first things Marti did was launch a pilot program to develop a baseline understanding of the county’s unsheltered population. They developed a field application that outreach teams could use to identify the locations and demographics of homeless encampments.

All of the data collected was entered directly into the mobile surveying app, ArcGIS® Survey123, and displayed visually on an interactive web map that could be shared with other teams within the Outreach Coalition, a collaboration across multiple agencies and organizations that coordinates outreach to individuals and families.

For instance, the outreach teams collected information about potential hazards—such as needles or animals—at each camp, so support staff knew what to expect when visiting a location.

In another example, outreach teams tried to determine if any veterans lived in the camps. “Then we could deploy veteran outreach services to that encampment so they could receive the appropriate services,” Marti explained.

Any department could search for encampments that included the specific populations it served, such as the elderly, or it could filter for that information on the map to identify the encampments the department wanted to focus on.

Keeping unsheltered populations safe during COVID-19

When the pandemic hit Snohomish County in early 2020, staff within the Emergency Coordination Center knew they must act quickly to ensure the safety of one of the most vulnerable populations. The county was concerned about the spread of COVID-19 among individuals experiencing homelessness, because oftentimes, they lived close together in congregate shelters or encampments without access to sanitation resources and showers, Marti said.

To properly deploy the right social services from the SAFE team, the first task was to understand the locations and demographics of the region’s current homeless population.

The outreach team included medical staff to assess COVID-19 symptoms. A housing navigator connected people to housing resources. Embedded social workers linked people to behavioral health services, law enforcement, the fire department, and emergency services.

The team sought a baseline understanding similar to what they gained from a pilot program two years earlier—but with an additional layer of data collected about how the population was being affected by the virus.

Marti said the previous experience proved key to getting the program off the ground quickly. Given the many different stakeholders, it was an accomplishment that would have taken much longer without a collaborative technology like GIS.

“Because of our previous experience using Survey123 to collect homeless encampment data, we were able to develop a survey and deploy the application within five days,” Marti said.

Over two separate weeklong outreach periods in the spring of 2020, the team contacted more than 400 unsheltered individuals. The team members were surprised to find very few people displaying COVID-like symptoms. Instead, the primary way they had been affected by the virus was in their access to essential resources like food, water, showers, restrooms, shelter, and medical treatment.



The SnoCo Agencies for Engagement (SAFE) team includes doctors, paramedics, social workers, and law enforcement officers who have gone out in the field to reach the county’s most vulnerable residents. Their work included spending three evenings visiting meal distribution sites in Everett, Washington, to assess people with COVID-19 symptoms and provide hygiene kits and face coverings.

As parks, restaurants, and offices closed, the unsheltered population was left with nowhere to turn for basic amenities.

The outreach team used that insight to deploy crews into the field to support people who needed assistance with behavioral health or housing, for instance. The county's Emergency Coordination Center also used that information to create hundreds of individual hygiene kits, which the SAFE team dispersed to people experiencing homelessness.

Marti says the app's ease of use and data-capturing capabilities in real time proved essential during the early days of the crisis, especially among fieldworkers who had little experience using GIS.

"The team was able to easily input the information on a mobile app as it was being gathered," he said. "And it's real time, so there's no lag in the data. Especially early on with COVID-19, we needed answers fairly quickly. This just provided a really easy mechanism to gather the information and then share it."

Durham says that for those with a nontechnical background, one of the biggest attractions of GIS is its ability to democratize data. "The tools make information digestible and accessible to people like myself and to the county executive."

Understanding a crisis

The COVID-19 pandemic is not the first time the county used GIS to support human services. The Snohomish County Opioid Response Multi-Agency Coordination (MAC) Group also used GIS to help show how opioid abuse affects residents.

The MAC Group started by collecting data from a number of different agencies, including fire and emergency medical services (EMS), law enforcement, and social services. When any of those agencies responds to an opioid-related call, that data goes into a GIS-powered dashboard where it's displayed on a smart map. If an

emergency medical technician uses a drug called Narcan to counteract an opioid overdose, for instance, that data is automatically sent to the dashboard, so the team can see when the drug was deployed, demographic data about the patient, and where the event took place.

Using a GIS dashboard to analyze and display data gave the MAC Group important insights about the extent of the opioid crisis in Snohomish County. The dashboard has also helped county officials effectively share information with the public, thanks to the universal appeal of maps. People began to see that no neighborhood was immune from opioid abuse when they saw a map of places where emergency responders attended opioid-related calls.

Durham said the biggest surprise for the public has been seeing exactly whom the epidemic is affecting. “It’s not only the geographic locations of opioid-related events but also the age range that this impacts. We see very, very young people and people into their 70s. Displaying the data visually helps the general public better understand the depth and breadth of the issue—that it’s not other people. It’s about them and their families as well.”

The use of GIS has helped county become more proactive in its response. For instance, county leaders can identify locations with a higher incidence of use and deploy intervention services to help prevent overdoses. With limited resources, targeted outreach is essential.

Marti believes that, given its wide breadth of capabilities, GIS has already become critical to the county. “It’s been two years since Human Services began using GIS, but I think we’re still just scratching the surface with the technology that’s available.”

A version of this story by Christopher Thomas titled “COVID-19: Data and Smart Maps Are Elevating Human Services in Snohomish County” originally appeared in the *Esri Blog* on September 29, 2020.