Esri News
for Health & Human Services
Winter 2013/2014

Esri Tools Help Human Services Agencies Keep Clients Safe

Human services agencies create GIS maps and use them to locate clients in need of assistance in the face of natural or man-made disasters. This means huge time savings, allowing personnel to focus on important agency work.

↑ A family looks at the Ammo Fire at the entrance of Camp Pendleton, October 23, 2007. (Photo by Gabriel Bouys/AFP/Getty Images. Courtesy of the San Diego Wildfires Education Project, San Diego State University.)

Fifty-four California counties partner with the nonprofit National Council on Crime and Delinquency (NCCD) for child welfare data monitoring and analysis through a service called SafeMeasures. This NCCD program uses near real-time data to assist child welfare agencies in California and elsewhere to improve outcomes for clients by helping agency staff prioritize work and identify potential gaps in services before they lead to negative outcomes.

In 2006, NCCD added mapping to SafeMeasures by geocoding the addresses of all clients and foster homes in the process. NCCD identified sources of GIS data—such as the National Oceanic and Atmospheric Administration, the United States Geological Survey, and California Department of Forestry and Fire Protection (CAL FIRE)—that could provide up-to-date information about the location and extent of wildfires, earthquakes, and other disaster situations. Layering client and event information together on a single map created a consolidated source of impact information that made it possible for NCCD's client child welfare agencies to discard the manual process they previously had used.

Such consolidated information is crucial because a given California county may be responsible for the thousands of children and adults in homes and facilities spread over a large geographic area, said Peter Quigley, managing director of Information Systems at NCCD. When emergencies or natural disasters strike, these agencies must quickly communicate with their facilities to keep their clients safe, Quigley said.

"In California, where wildfires and earthquakes are unfortunately common, this can occur several times a year," he said.

Mapping opened a new door for human services agencies to serve their clients. But NCCD wanted to provide the best possible service to clients and quickly searched for ways to improve SafeMeasures' mapping capabilities. In 2013, the council moved to Esri products. Tim Connell, director of application development at NCCD, recalled, "The mapping tools we had were not flexible, and they did not integrate well with our software."

Connell decided to adopt Esri tools after thoughtful research. "I looked at a lot of different options, both open source and not," he said. "I thought that the combination of all the things that Esri products offer made the most sense from a mapping point of view. Esri tools were the most flexible in our software architecture, and they were extendable in ways that other platforms were not. Plus, the Esri tools create very useful and user-friendly maps."

For geocoding, Connell chose Esri's StreetMap Premium because of its accuracy and coverage. Both qualities are critical to ensuring that a human services agency reaches all clients potentially affected by a disaster. The highly confidential nature of NCCD's data meant that the agency needed to develop a custom solution rather than use an external

service. Esri technology, in conjunction with StreetMap data, allowed NCCD to develop its own geocoder. Because NCCD geocodes 50,000 to 60,000 addresses a day, Esri technology provides a high-speed, low-cost solution.

"StreetMap had the most accurate and consistent data of the geocoding platforms we looked at," explained Connell. "Plus, the integration with ArcObjects meant that we could do everything in-house. That was important to us."

Esri's ArcGIS API for JavaScript provides the clean, easy-to-understand user interface that Connell wanted for NCCD's clients. Standout features included better basemap imagery than NCCD's prior tools—less cluttered at higher scales and more consistent in displaying landmarks. NCCD uses custom and open-source code to access, organize, and render data for display, using standards like Web Map Service (WMS) to integrate this data into the map.

"The Esri API made it easy for us to create different tools, such as one that allows users to draw a circle on the map and generate a list of all the client addresses in that circle," Connell said.

New Agile, Streamlined Process

With the improved SafeMeasures maps, California child welfare agencies have an agile, streamlined process with which to keep clients safe in the face of an unfolding emergency. Connell listed some of the many instances in which mapping has been integral: "We've dealt with earthquakes, house fires, and satellite-detected fires, to name a few examples."

Esri tools allow SafeMeasures mapping to provide consistently high-speed service: "We run through every 15 minutes and compare the locations of all the foster home or care facility addresses with our known current events," said Connell. "Our users can register for alerts, and anytime there is an emergency event—such as a wildfire—they will get an e-mail saying that one or more of their cases is within a particular distance of the event and give them a link to the map."

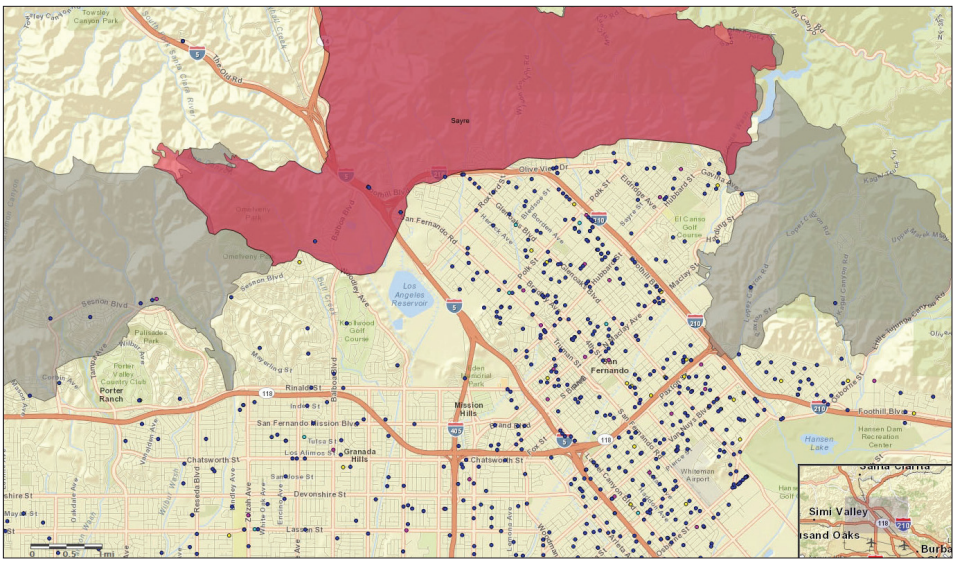
Luis Fernandez, a data supervisor in San Diego County, appreciates how SafeMeasures has streamlined things. "Now we can see exactly where the kids are, and the map shows where the disasters are, so it's simplified quite a bit." Fernandez observed that in the event of a fire, "We go to that map, see where the fire is, and see the dots of placements near it. We can use that map to contact those foster homes."

See, for example, figure 1, a map of the Sylmar Fire, also known as the Sayre Fire, in November 2008, which resulted in the loss of 489 homes in Los Angeles, California. This map, and figure 2, the Rim Fire in 2013, were created by an automated system NCCD developed. These maps are available within the SafeMeasures system and are assembled automatically on request using regularly updated data elements.

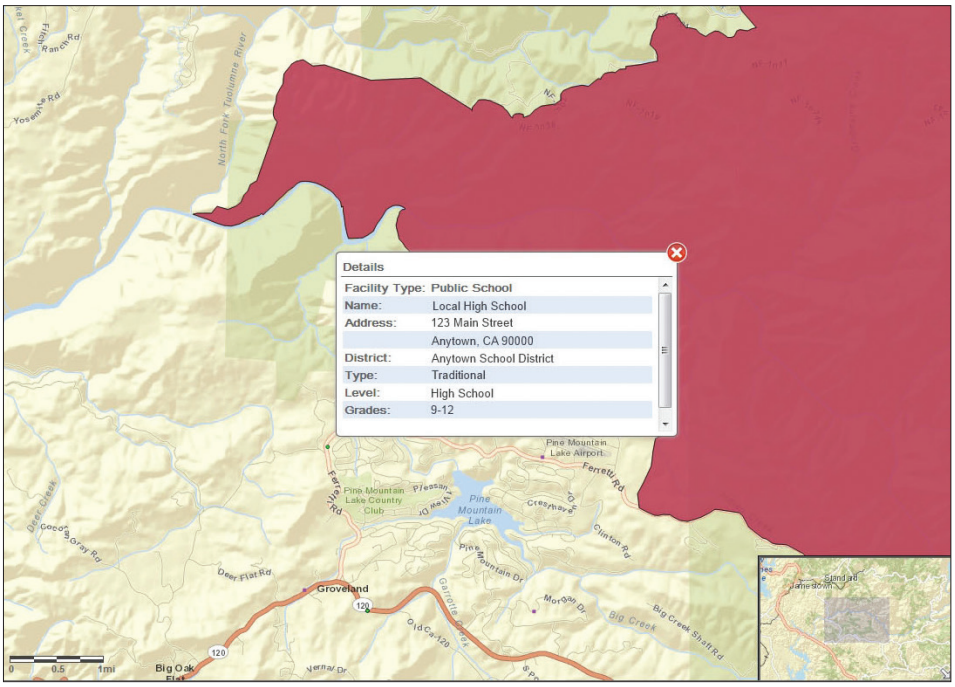
Tony Muga, a San Bernardino County child welfare data analyst, related an instance where SafeMeasures mapping has helped his agency quickly reach clients in need. One time, dangerous water contamination in the desert threatened foster homes in the area that hadn't yet been called by any other agencies. "SafeMeasures mapping gave us the ability to get right on that—we were the first agency to alert the community to the problem," Muga said.

Fernandez also recounted how SafeMeasures mapping helped ensure safety for clients in a perilous situation. "There was a home in San Diego where the residents were making homemade bombs," Fernandez

↑ A fire fighter is dwarfed by flames along East Grade Road on Palomar Mountain during the Poomacha Fire, October 24, 2007. (Photo by Wally Skalij/*Los Angeles Times*. Courtesy of the San Diego Wildfires Education Project, San Diego State University.)



↑ Figure 1. Sayre Fire, 2008. The map displays the location of foster homes relative to the fire's perimeter. In addition to active fires, the map displays recently burned areas to help identify homes in need of follow-up assistance.



↑ Figure 2. Rim Fire, 2013. Clicking a marker opens a panel containing details for that location, including contact information, number of clients, and age ranges.

recalled. "The house had to be torn down, so to do that the entire area had to be evacuated. There was a lot of dangerous material in the house, including chemicals. We used the map to figure out which of our kids were in that area to make sure they were moved to a safe place."

In a stringent fiscal climate, the mapping approach reaps multiple benefits. Fernandez noted that, in the past, data requests and regular reports were put aside when agency personnel had to find clients affected by an emergency. "Now, it takes only 15 percent of the time it took before because we don't have to cast as wide a net," he said.

Muga also has used mapping to help the agency address other mandates, like minimizing negative effects of placement on foster children.

"The mapping feature provides a view of where a child has been placed before. It shows placement #1, placement #2, etc., and draws lines between them so we know in what general areas a child has been placed," he said. "The child may have friends in the area; it's a familiar place. If it's safe for the child to be in that area, we [want to keep him or her there] to have as little impact on the child's life as possible."

For more information, contact Tim Connell, PhD, NCCD's director of application development, at 800-306-6223 or tconnell@nccdglobal.org, or visit www.nccdglobal.org.

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