PatagoniaHealth

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Matthew Simon, MA, GISP talks about the benefit of using Collect SMART to simplify community surveys through digital data colection and analysis.

Collect SMART is a Survey Management and Response Tool developed by the North Carolina Institute for Public Health (NCIPH), and utilizes a CDC (Centers for Disease Control and Prevention) sampling method for rapidly collecting community-level data, often for pre- or post-disaster assessments.

How did you become involved with the Collect SMART project?

NCIPH was looking for someone with a GIS and GPS background to help carry on the work of a statewide rapid response project in 2005 related to public health preparedness. The project was federally funded, and received software and some hardware from Esri.

By the time I was brought on board in 2009, the project had been around for a while, the equipment was aging, and they wanted to figure out how to keep it moving, how to improve it, and then how to support it.

Briefly describe the evolution of Collect SMART.

When I was brought into the project, they were using these expensive GPS units with sub-meter accuracy. I was familiar with them – I came from an environmental science background and used them to delineate wetland lines. But it was really difficult to train people on because essentially you're training people how to do mobile GIS which is not a trivial task. Additionally, as local health departments don't collect this sort of data every day, most lack the capacity on training techniques, equipment, and data management skills, so they would often call the state for help.

We transitioned to a new set of GPS units and made some other improvements, but it was still difficult to train frontline public health staff given the complexity of the equipment and level of epidemiologic skill needed to appropriately draw samples. We suggested to the CDC the creation of an easy-to-use mobile app to handle the sampling, and they were on board. The site selection has to occur in ArcGIS and not every health department has it. It's expensive, it's not easy to use, and it's all based on census data so we thought why not create a web site to go along with the app.

So that's how we started with Collect SMART and we had preparedness funds through the Preparedness Emergency Response Learning Centers (from the CDC), and that funded us as a pilot to see if we could do it. We tested the first proof of concept in Durham, NC in 2013. Now we are using 7" tablets that are affordable and we did it in a phase-by-phase approach, testing the system out in 15 different data collection efforts including quite a few community health assessments, a couple teen pregnancy opinion surveys, and a survey on disaster recovery. We've collected nearly 3000 interviews with over 280 teams providing feedback along the way.

How do you support the Collect SMART survey process and how does the software benefit the survey work conducted at the health departments?

Primary data for Community Health Assessments usually involve door-to-door surveys, but you could collect information any number of ways. The ideal sampling would be a totally random selection of interviews, but then you're driving all over the place and it takes too much time and is not an efficient way of collecting data. Random-dig-it dialing has its limitations as well since more and more households only have cell phones and acquiring cell phone databases are costly and not complete.

The CDC methodology we use for community data collection is cluster sampling which is a form of random sampling in two different stages; we randomly select neighborhoods, using census data, with probability and proportion of the size. The second stage is randomly selecting the homes within each neighborhood.

So the benefit of using Collect SMART is our sampling frame uses the entire community and you're hitting all the necessary demographics and everything lines up well. It also allows the manager to quickly convert the data collected in Collect SMART into actionable analysis. The data is also generalizable to the community at large.

The software can track the surveyor's location for safety purposes to see where they are in the field, and show the progress of the surveys by cluster. It is helpful for the project manager to see the real-time flow of data collected. The results come in through the cloud so every time a survey is completed the information is sent up and added to the project, and can then be easily imported back into Epi Info™.

When we go in the field, we do Just-in-Time (JIT) training; we teach them how to conduct an objective and efficient interview, how to go door-to-door, how to use the App, and then we manage the data collection from the Collect SMART dashboard which is part of the system.

Currently, we are nationwide. A Kansas pilot county was helpful with working out the kinks. We have users in IL, Kansas and in Fairfax County, VA.

Will the data from Collect SMART integrate with other systems such as Geo Mapping programs or Electronic Health Records?

Right now, GIS is strictly done on the sampling side of things, not making any glorified map of results. The utility of it is collecting new information that you can't already get from a secondary data source, like BRFSS (Behavioral Risk Factor Surveillance System). Linking it directly into EHR is not something I've worked with. We are encouraging counties to work together.

What does the future of Collect SMART look like?

There's a possibility that some of the Collect SMART features will be added to Epi Info™ for users worldwide. I think that's an exciting opportunity to share our work with others and provides some sustainability. In an ideal world, we found some other type of funding source that would allow us to continue to develop it and afford to make it if not freely available, at a very low cost to all the public health departments and hospitals who are doing these health assessments because in my mind this is still the best way to get at some of this information. You're going to get higher quality information this way, which should result in better outcomes and we want to connect those dots. Recognizing that we don't always live in an ideal world, we're looking at ways to continue to support the tool. Some research and development funding I think would be ideal to push it to the next level. But even if we kept it as is, it is already a very functional and useful tool.

For more information about Collect SMART visit http://sph.unc.edu/nciph/collectsmart/.

About Matthew Simon, MA, GISP

Research Associate, NC Institute for Public Health

Matthew Simon is a Research Associate and GIS Analyst with over 6 years of experience collecting and analyzing primary data in communities as part of their community health assessments. He is particularly interested in working to advance primary data collection methods for communities using new mobile and web-based software. Since 2009, Simon has provided technical support and training in over 23 different data collection efforts. As a certified Geographic Information Systems Professional (GISP), Simon has achieved proficiency in the field of Geographic Information Science both academically and professionally.

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