



2013 LHD of the Year Award

LHD NAME: Gaston County Health Department

LHD SIZE (population served): Medium (50,000–499,999)

ESSAY THEME: Data

LHD Overview

The Gaston County Health Department (GCHD) is the governmental public health agency for Gaston County, NC, which is immediately west of the city of Charlotte. Once a rural and small-town manufacturing community, portions of the county are transitioning into suburban communities, especially along the Interstate-85 corridor that leads into Charlotte. The health department's approximately 200 employees serve the county's 212,000 residents through food and lodging inspections, issuing well and septic permits, health promotion programs, and at three clinical locations that provide immunizations, pediatric care, family planning, full-service maternity, WIC, laboratory, and sexually transmitted infection care. GCHD treated nearly 19,000 unique patients last fiscal year (July 1, 2011–June 30, 2012). Once one of the nation's largest textile manufacturing counties, the demise of the American textile industry and the tradition of youth quitting school to work in the textile mills has left Gaston a legacy where 80 percent of residents over age 25 are high school graduates and only 16.9 percent have a bachelor's degree. Limited education is also reflected in the 15.3 percent of total county residents and the 20.4 percent of children who live below the federal poverty level. The median household income is \$40,674.

Statement for LHD of the Year Award: Data

GCHD is dedicated to using empirical and actionable data to better target and evaluate its prevention and intervention programs.

Five years ago, most of the department's decisions were based on state-level data, informal insights, and sometimes even gut feelings. Recognizing the critical importance of taking effective and efficient action with limited resources, GCHD began using spatial technology and analyses to refine its program activities. Following in the footsteps of John Snow, GCHD has found this investment has greatly enhanced staff performance and has made the most of its limited resources.

Background

In 2006, GCHD began to increase its focus on reducing the county's high teen pregnancy rates. As part of a grant application for an evidence-based after-school teen pregnancy reduction program, health department staff worked with Gaston County geographic information systems (GIS) personnel to plot the home addresses of teens who gave birth on a county map and to identify geographic patterns. The births were most heavily concentrated in the central and southwest portions of the city of Gastonia,

which helped guide the health department's decision to base the program at the West Gastonia Boys and Girls Club. The grant application was funded and the program is now in its ninth year. This was GCHD's first experience using spatial analyses with epidemiological data and ideas for how the department could further apply these methods began to grow.

In 2007, GCHD began receiving anecdotal reports that residents in an unhealthy community were having difficulty reaching the health department for services. The Highland community is less than four miles from the health department, but upon further investigation, GCHD staff learned that a one-way bus ride required a bus change—a complication for those travelling while ill, with children, or with disabilities—and could take as long as three hours.

To determine the accuracy of this information, the health department conducted a door-to-door survey and recorded responses on laptop computers. The survey results validated the need for what became the Highland Health Center, a state-of-the-art, groundbreaking collaboration with Gaston County's Federally Qualified Health Center.

The process stands in stark contrast with the department's conduct of its quadrennial community health assessment (CHA) in 2008. Having hired a health data analyst earlier that year, agency staff embraced GIS technology to map health indicators, socio-economic variables, and utilization data. In turn, GCHD identified geographic patterns and developed hypotheses about the prevalence of health disparities.

For the CHA, staff used maps to identify neighborhoods where residents had high rates of poverty and preventable chronic disease. The department secured handheld computers and administered its Quality of Life survey by going door to door in the targeted neighborhoods. The resulting data illuminated the barriers to improved health status among the most at-risk members of the community. By contrasting survey responses with those of community leaders, randomly selected county residents, and high school juniors, the results of the door-to-door survey highlighted the significant and different needs of the county's poor and underserved populations. This also signaled a shift on how and where the health department would target its prevention programming. GCHD then had a clearer idea of where its programming would do the most good.

Building on this experience, GCHD fully employed its GIS mapping resources in 2009 to address H1N1 flu. Early on, H1N1 vaccine was in short supply, so GCHD sought to administer the vaccine where it was most needed. In partnership with the local hospital, the health department secured the home addresses of patients who visited the emergency department with symptoms of influenza-like illness (ILI). Using GIS mapping software, GCHD created heat maps to show where county residents were experiencing ILI. The health department then used the county's reverse-911 system to call residents in those areas and encourage them to obtain the H1N1 vaccine at nearby locations where the health department had set up special immunization clinics. GCHD also increased community collaboration by sharing this data. GCHD's health data analyst began to produce similar reports and maps in partnership with dozens of local organizations with public health-oriented missions. These include the public school system, a local minister's coalition, the federally qualified health center, the hospital, and neighboring local health departments.

Battling Teen Pregnancy

GCHD long knew teen pregnancy was a dire problem in Gaston County; its rates were traditionally higher than the state and its minority rates were even more discouraging. In 2009, approximately one in five girls was statistically projected to become pregnant before their twentieth birthdays and minority teens had 15 percent more pregnancies than white teens.

Using state data and ArcGIS® software from Esri, the health department was able pinpoint the residences of pregnant teens. By plotting their home addresses, the department was able to create a choropleth map, by Census tract, showing the prevalence of teen pregnancy across the county. The map also illuminated several teen pregnancy “hot spots.” This enabled GCHD to accurately select sites for delivering teen pregnancy prevention programs.

Methodology

GCHD used state birth records for babies born to women aged 15–19 and Census data to calculate teen birth rates by Census tract. The department then mapped the results, showing rate by tract and comparing each tract with the relative average teen birth rate for the state. Both of these maps also presented the boundaries of middle- and high-school feeder districts. This information was a boon for the department. Gaston County is home to approximately 212,000 residents across 14 municipalities and a large unincorporated rural area.

Previously, GCHD attempted to blanket the county with teen pregnancy prevention programs using a handful of health educators and nurses. With this newly generated information, the department was able to focus on towns and neighborhoods that had teen pregnancy hot spots to implement the following programs:

- Parents Matter!, a CDC prevention program that helps parents improve their skills and increase their comfort when talking to their children about sexual values and sexual risk reduction.
- Teen Outreach Program (TOP), a nationally-recognized after-school curriculum that helps teens ages 12–14 avoid pregnancy and set personal goals. The program works to promote healthy behaviors among young people, help them learn life skills, and build a sense of purpose through community service and planning to meet their life goals.
- Teen Parenting Program, a program for girls ages 19 and younger who are currently parenting one child and are enrolled in school. This peer group shares information, resources, and support for staying in school, acquiring job skills, improving parenting abilities, preventing child abuse and neglect, and delaying future pregnancies.
- Making a Difference!, an eight-part curriculum that provides youth with the knowledge, confidence, and skills necessary to reduce their risk of sexually transmitted infections (STIs), HIV, and pregnancy by abstaining from sex.
- Making Proud Choices!, a safer sex program for middle and high school youth. This program gives youth the knowledge, confidence, and skills necessary to reduce their risk of STIs, HIV, and pregnancy by abstaining from sexual activity or using condoms if they chose to have sex.

The teen pregnancy choropleth maps also provided a basis for GCHD to successfully secure grant funding to further its teen pregnancy prevention programs. Most notable is its participation in Gaston Youth Connected (GYC), a five-year, \$5.8 million community-wide teen pregnancy prevention initiative of the Adolescent Pregnancy Prevention Campaign of North Carolina (APPCNC). Only eight communities in the nation received this funding from the Centers for Disease Control and Prevention. In 2010, GYC set a goal of achieving a 10-percent reduction in the county's teen pregnancy rate. GCHD's data analyses have been considered so critical by APPCNC that the campaign is now one of GCHD's most frequent collaborators and requestors of new analyses. With GYC funding, GCHD established four Teen Wellness Centers, where teens receive high-quality, confidential birth control, and STI and pregnancy testing at low or no cost. The Teen Wellness Centers opened a year ago in the heart of Gaston's most significant teen pregnancy hot spots – the town of Cherryville, the city of Bessemer City, southwest Gastonia, and the Highland community.

GCHD is now seeing encouraging trends. In 2011, Gaston's teen pregnancy rate dropped 18.5 percent, hitting a record low for the second consecutive year. Not only was that drop greater than the state's decrease, it represents the fourth consecutive year of diminishing rates in the county. The African-American teen pregnancy rate in 2011 dropped more than 26 percent from 2010, and the Hispanic rate dropped more than 28 percent in the same period. With more than two years left in this initiative, its goal of reducing teen pregnancy rates by 10 percent has already been exceeded.

Moving Forward

GCHD is now developing new mapping applications to gain greater insight into Gaston County's health disparities. In 2011, GCHD was interested in bringing the Nurse-Family Partnership, an infant and maternity health promotion program, to the county. Gaston County was not among the 30 counties identified as having the greatest need for the program, but after producing a map that demonstrated the county's socioeconomic profiles were deceptively bolstered by six Census tracts with extremely high-functioning populations, GCHD received the funding. One hundred young lives will change over the next two years as a result of the department's Nurse-Family Partnership program.

Most recently, the department's health data analyst created a series of choropleth maps depicting life expectancies in each of the county's 65 Census tracts. The maps combined statistical, spatial, and data analyses to produce details on the areas hit hardest by low socio-economic standing and poor health status and detail how those factors affect the quality of life for residents. GCHD will use this map to further target its joint initiative with the local hospital and community health center to improve its county health ranking.

At the time of this application, GCHD was preparing to consolidate with the Gaston County Department of Social Services on July 1, 2013. GCHD analyzed the data needs of that agency and explored how they can use mapping to help jointly deliver services more efficiently and effectively. Further, GCHD is training data-focused personnel and creating an informatics division, so the departments can further target outreach and intervention initiatives.

GCHD's use of these types of data analyses has led to a renewed focus on quality, cost, and timeliness for the department. GCHD is an early adopter of electronic health records (EHRs), and while the implementation is ongoing, they have already begun extracting primary data and conducting analyses into when its services are used, why its services are being accessed, and which program resources should be reallocated to increase program reach and efficiency. The department is also able to compare and contrast its primary data with state epidemiological data to gain increased insight into its health disparities. GCHD sees no end in sight for the practical applications of these types of analyses.

GCHD is a health department in a medium-sized community, but they have big-city ambitions. The department is certain that its increased focus on data-driven services has allowed the department to serve Gaston County more effectively and efficiently.