

Esri News

for State & Local Government

Spring 2019

ArcGIS Apps Help County Sheriff Provide Targeted Assistance to Homeless Populations

Introduction

San Bernardino County, California, is the largest county in the US and faces a growing homeless population. To address this issue, the San Bernardino County Sheriff's Department (SBSD) formed the Homeless Outreach Proactive Enforcement (HOPE) team to provide services to the more than 1,800 identified homeless people within the county. With 20,000 square miles to cover, the HOPE team modernized its approach to homelessness by replacing spreadsheets with a geographic information system (GIS) to serve as the central system of record. Nine law enforcement agencies, fire services, the US Forest Service, and

health and human service agencies contribute information to the GIS and use shared data to make informed decisions concerning homelessness.

The Challenge

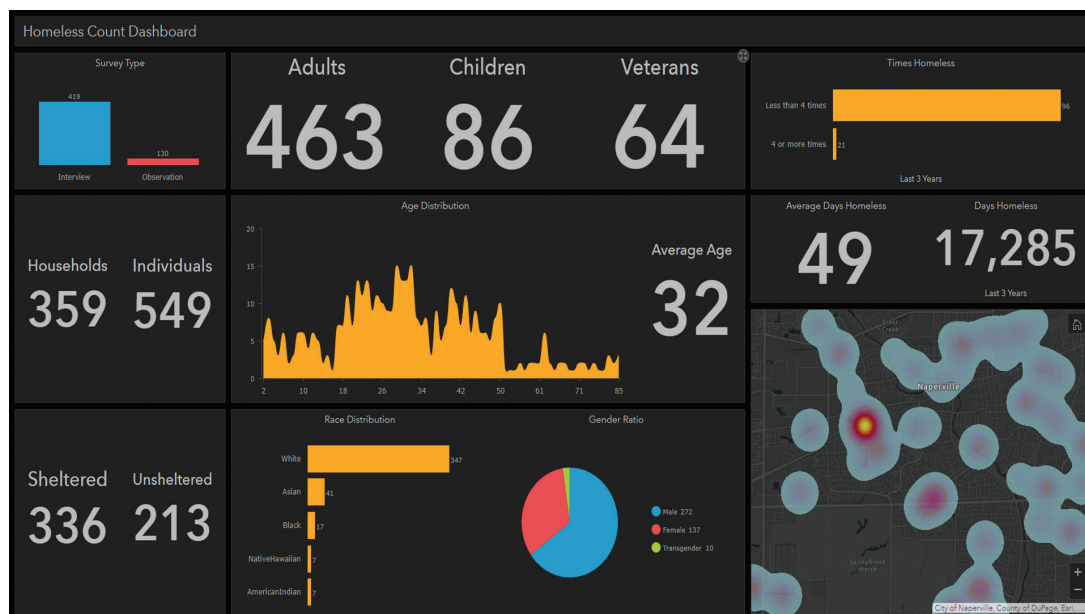
The county's homeless population was originally documented on paper during field surveys. This data was brought back into the office and manually entered into spreadsheets. To find case information, county agencies had to cross-reference multiple spreadsheets, which was a time-consuming and error-prone process. Because data wasn't shared between county services, such as the police department and health and human services,

county agencies were operating with incomplete information. The locations of homeless populations were often anecdotal and not tied to an accurate map. This made it difficult to connect underserved populations with the assistance they needed, such as mental health services, food, and shelter.

The Solution

The SBSB HOPE team members used Esri's Survey123 for ArcGIS on smartphones and tablets to easily collect data in the field and quickly create detailed homeless person profiles and contact records. This survey technique was

continued on page 3



The Homeless Contact Form is a mobile application for collecting data. It includes the following fields:

- Reporting agency:** A dropdown menu.
- Region:** Radio buttons for East Valley, West Valley, and High Desert.
- City:** A text field with a dropdown menu.
- Contact date:** A date and time picker set to December 4, 2018, at 6:09 AM.
- GPS location:** A location picker showing coordinates 33.953°N 116.969°W ± 65 m.

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ArcGIS Apps Help County Sheriff Provide Targeted Assistance to Homeless Populations

continued from page 1

expanded to other county agencies. They also used Collector for ArcGIS to quickly create accurate maps of homeless encampments. These maps enabled SBSB to understand not only the size and details of encampments but also how they were distributed around the county and their proximity to available services. As each survey and map was captured, the information was automatically added to the central system of record in near real time. Partnering agencies used Esri's Operations Dashboard for ArcGIS to track the progress and location of the field data collection efforts and to monitor changes in the homeless populations. Additionally, these dashboards are also used to understand how populations are affected by season and geography.

The Results

The survey and map information collected by the SBSB HOPE team members helped them to understand where to allocate the appropriate resources most effectively. GIS saved them time and reduced their driving distances, saving money as well. According to deputy sheriff Mike Jones, "With the [ArcGIS apps], we are able to provide a more targeted approach, saving us an additional hour to an hour and a half a day." The location-based system that SBSB created allows multiple agencies to contribute and search for homeless records. It changed how the HOPE program serves homeless populations in the county and gave team members the ability to collect and share information quickly between agencies.

Information sharing enabled the sheriff's department to collaborate with other police departments across the county, making it faster and easier to access homeless people's contact information. Having access to detailed digital maps on mobile devices gives officers the ability to collect data in the field and make it immediately available with real-time dashboards for faster decision-making and coordination of work in the field. Ultimately, GIS made it easier for officers, health workers, and people in other agencies to work together and connect underserved populations with the services they needed.

To learn more, please visit go.esri.com/sbsb.



Is Your Workforce Change-Ready?

By Suzanne Boden, Esri



As government organizations prepare to modernize their mission-critical GIS systems and applications, the question many are asking is not where

do we start, but rather, how can we get to the finish line faster?

The finish line is not the system go-live date. The finish line is the date when the new system begins delivering the intended business value.

From the high-level organizational view, deploying new technology is not the primary goal. The primary goal is to leverage new technology to achieve defined business objectives. Key metrics for technology projects are speed and rate of user adoption—which means the workforce has a major impact on project success.

Despite the criticality of adoption, a common reason projects fail to deliver the intended business value is the lack of attention to the people who are expected to use new systems and applications.

The Human Impact of Technology-Driven Change

Recognizing the importance of user adoption to implementing the ArcGIS platform, in 2017 Esri launched a people-focused change management consulting practice. Esri change management consultants apply the Prosci ADKAR Model for Change (visit www.prosci.com/adkar/adkar-model to learn more about the model), a model used successfully by many Fortune 100 companies.

Research (go to www.prosci.com/resources/articles/why-change-management to read article) shows that when organizations combine a people-focused change management plan with

a technology project plan, they are up to six times more likely to achieve project success.

“Our focus is helping customers achieve their ArcGIS project goals by proactively preparing their workforce for change,” said David Schneider, a Prosci-certified Esri change management consultant.

“Managers expect employees to quickly start using new apps that have been created for them, but a common scenario is that some employees are very comfortable with the status quo—the familiar workflows that have been in place for years. Employees may actively resist change or simply take longer to adapt to the new environment than leaders expected.”

Brian Collins, GIS manager in the Office of Information Technology at Montana Department of Natural Resources and Conservation (DNRC), has been working with Esri consultant Michael Green to provide effective change management to employees impacted by a new ArcGIS Enterprise deployment. As the DNRC updates its version 10.2 system to the latest version, legacy applications can no longer be supported.

To help their users adapt to the new environment, project sponsors understood they needed to proactively prepare users for the impending changes. “One of our keys to success is rooted in the relationships we’ve established with the hundreds of personnel we support. Taking a people-focused approach to change management has presented us with an opportunity to significantly minimize resistance by methodically engaging with our end users throughout the process,” said Collins.

According to Green, engaging users early and often with information about a planned change is a solid strategy to

minimize resistance. That is why a detailed communications plan is an integral component of Esri change management plans.

Planning for Paperlessness

Many state Departments of Transportation (DOTs) are modernizing their approach to field data collection. Leaders clearly recognize the business value of replacing paper-based workflows with devices running mobile applications like Collector for ArcGIS. Schneider and Green have worked with several state DOTs. “Because smartphones and apps have become so ingrained in our culture, there may be a perception that getting large groups of people to use apps in place of paper should be quick and easy,” said Green. “While the apps are easy to use, ensuring that impacted staff quickly adopt the new workflow requires preparation and planning. To facilitate a smooth rollout, the project team needs to have a plan in place to build awareness of the change and support the supervisors of frontline employees performing the data collection workflows.”

Esri change management consultants are experts in helping organizations navigate the three phases of change: preparing for change, managing change, and reinforcing change. Through in-depth discussions with project sponsors and stakeholders, they develop a comprehensive plan to minimize change resistance, accelerate user adoption, and help organizations reach the finish line faster.

For more information on Esri change management consulting, contact your Esri account team or visit go.esri.com/change-mgmt.



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Digital Workflows Save Rural Water Utility \$1.5 Million

Located in north central Ohio, Rural Lorain County Water Authority (RLCWA) was formed in 1973. RLCWA has approximately 21,000 service connections and 1,200 miles of water mains covering a six-county area of 680 square miles. The utility serves 21 contiguous townships, 4 villages, and 1 city.

RLCWA's core operation is to purchase treated water from three main providers and distribute that water to rural areas in Ohio that would not otherwise have access to treated water.

The Challenge

RLCWA had always used a paper-based work order system to track meter changeouts. In 2017, RLCWA began a meter changeout program by which 19,000 meters would be replaced with radio-read models. The changeout program called for three, two-person crews to be operating at a time. This process had the potential for creating a backlog of work orders waiting to be entered into the billing system as well as making it extremely difficult to track the progress of the project.

A more efficient method was needed to replace the paper-based process.

The Solution

RLCWA had a well-developed geographic information system (GIS) using ArcMap, and the utility was in the process of implementing ArcGIS Online. Setting up an organizational account in ArcGIS Online enabled RLCWA staff to use Collector for ArcGIS on their tablets. The field crews were able to enter customer data and new meter information quickly, and by pairing the tablets with a GPS device, they could also accurately collect the location for every new meter. Workforce for ArcGIS was used to monitor the progress of the field crews. Data was displayed on a web map that provided a visual status report, allowing staff to easily track the progress of the meter changeouts.

Operations Dashboard for ArcGIS provided real-time status of the meters changed to date and the percentage of total meters completed, and it displayed comments on any issues during the meter changeout. It also identified work areas, enabling notifications to be sent out to customers.

The Results

Implementing the ArcGIS platform allowed RLCWA to more



efficiently execute the meter changeout program. It provided the tools needed to collect, visualize, and share information via web maps and dashboards. Management was able to receive up-to-the-minute progress reports from the field crews and provide easy-to-understand updates to the board of directors.

RLCWA eliminated thousands of paper work orders and prevented hours of costly and time-consuming data entry by personnel in multiple departments.

Meter changeouts increased from an average of 15–20 meters per day to an average of 70 meters per day. Traditionally, it would take a clerk from two to three hours to enter the data into the billing system. Now, data on 1,000 meters can be loaded in 15 minutes.

Implementing the ArcGIS platform enabled RLCWA to perform all the work associated with the meter changeout program in-house, saving the utility \$1.5 million in contractor costs.

Get started mapping your system. Our affordable and easy-to-use applications will support your daily workflows.

Learn more at go.esri.com/RLCWA.

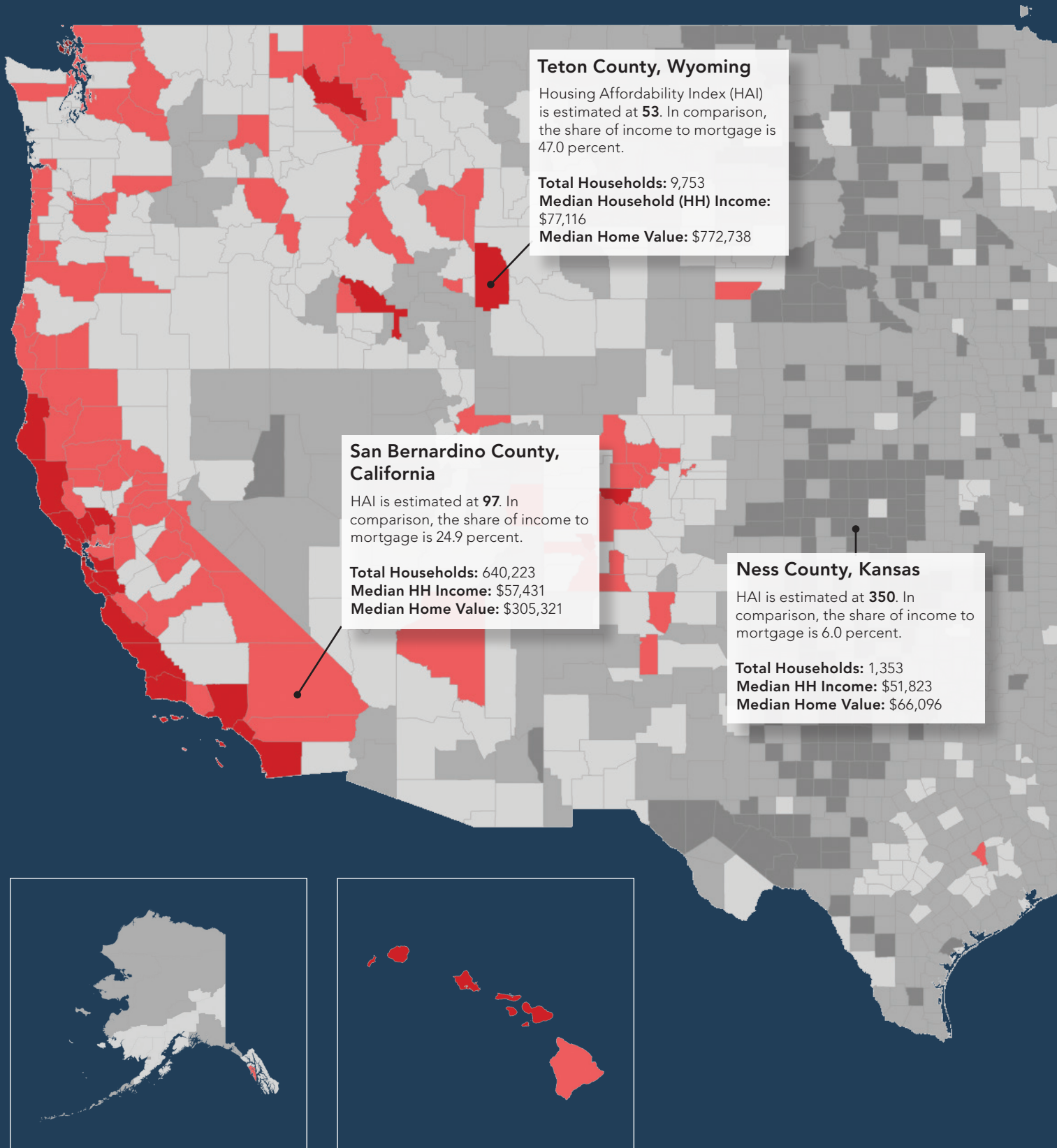
“The massive scale of our project necessitated a more efficient method of tracking the meter installations. By utilizing Operations Dashboard and apps, we were able to keep the project on schedule and avoid creating a backlog of paper work orders waiting to be processed.”

Joseph Waldecker,
Assistant General Manager,
Rural Lorain County Water Authority

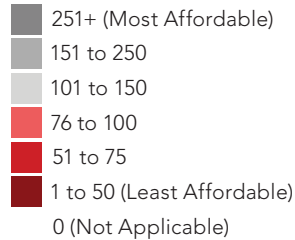


Do We Have a Housing Affordability Crisis?

Understanding who can and can't afford to live in your community is a good place to start.



Housing Affordability Index by County



Dukes County, Massachusetts

HAI is estimated at **47**. In comparison, the share of income to mortgage is 47.9 percent.

Total Households: 7,784
Median HH Income: \$67,280
Median Home Value: \$686,384

Champaign County, Illinois

HAI is estimated at **130**. In comparison, the share of income to mortgage is 14.5 percent.

Total Households: 85,810
Median HH Income: \$47,053
Median Home Value: \$145,054

The nation is pivoting to address the nation's affordable housing dilemma. The challenge governments face is ensuring that there is equity in how we design our communities to meet the needs of senior citizens, veterans, young adults, and people facing periods of homelessness, balanced with real estate developer requirements to drive a profit.

A renewed focus on housing will help communities avoid the pitfalls of interrelated issues such as unemployment, lack of transportation options, longer commute times, high vacancy rates, poor livability, little to no access to human services, and excessive stress on infrastructure.

GIS technology can assist in identifying the gaps in achieving housing for all. Maps and analysis like this can help in starting a dialog. This map, for example, explores the sometimes-burdensome rate of housing cost to income. Explore this map, along with other variables, on the Esri Maps for Public Policy site, a complimentary resource to help you get in front of the issue.

go.esri.com/housing-map

Tempe, Arizona, Maps and Monitors Opioid Use

By Jeremiah Lindemann, Esri



Close to a thousand people died from opioid overdose last year in Tempe, Arizona, according to the state's Department of Health Services.

More alarming, the number of lives lost is 20 percent higher than in 2016 and 74 percent higher than in 2012. Arizona is not alone in confronting the opioid epidemic. Bleak reports from the Centers for Disease Control and Prevention say drug overdose is responsible for more deaths in the US annually than guns or car crashes.

Faced with this crisis, Arizona governor Doug Ducey declared a health emergency in June 2017 and issued an executive order requiring incident reporting within 24 hours. The near real-time surveillance system would log suspected opioid overdoses, deaths, and administered doses of naloxone—a medication designed to rapidly reverse opioid overdose. The move was touted as a first step toward understanding the current opioid problem in Arizona and improving prevention and intervention.

Officials in Tempe now provide a near real-time map-based dashboard (go to go.esri.com/TempeDashboard to review the dashboard) of opioid-related emergency response calls in the city. The interactive site allows visitors to explore data based on age, gender, and status—such as homeless, veteran, or student—as well as incident dates. Within a few minutes, viewers can see how widespread and indiscriminate the disorder has become—spanning all neighborhoods and income levels.

This level of transparency in reporting is becoming more common in the battle

against opioid use, and Arizona officials see it as a positive stride.

"The more cities that share their data, the less stigma and anxiety I think people will feel about it," said Stephanie Deitrick, enterprise GIS manager for the City of Tempe. "Getting support from city leaders and our Fire Medical Rescue Department to share this data felt easy because they were already bringing together stakeholders to find ways to fight this epidemic and raise awareness."

Wastewater Monitoring Adds Insight

The City of Tempe recently teamed with researchers at Arizona State University (ASU) to test and monitor the city's wastewater to reveal the presence of opioids and other substances. Researchers have been studying sewage for years to uncover clues about a community's health and provide an additional metric for understanding problems.

Scientists and students in the Human Health Observatory lab at ASU's Biodesign Institute analyze wastewater samples for Tempe along with 300 other US cities. This approach produces anonymous, fact-based information about the substances and quantities people consume—beyond what is typically reported in a public health survey.

"A majority of wastewater in the Phoenix metropolitan area [including from Tempe] is routed to the 91st Avenue Wastewater Treatment Plant," said Adam Gushgari, postdoctoral research associate at the Biodesign Institute. "So we've had to locate sampling areas carefully to capture 100 percent Tempe-generated wastewater and minimize the input from other cities."

Wastewater analysis can isolate and identify concentrations of specific

compounds. Researchers then compare chemical signatures in the sample against a library of known compounds. Concentrations are extrapolated to determine mass per day per population, indicating the prevalence of drugs in an area, an estimated number of users, and even an estimated number of overdoses. "Drug use is very dependent on many factors—situational, economic, and even personal issues," Gushgari said. "What one city experiences might not be mirrored even in a sister city."

Wastewater analysis can distinguish a wide range of drugs and substances. In addition to opioids and other illicit drugs, the lab has tested for nicotine, alcohol, and stress hormones. Tests can also differentiate types of opioids including morphine, codeine, oxycodone, heroin, and fentanyl.

Open Data Could Help

Longtime advocates of open data, Tempe officials joined What Works Cities, a Bloomberg Philanthropies initiative that takes a data-driven approach to meeting the needs of citizens. In Tempe, open data based on wastewater research could prove critical in the fight against opioid addiction as well.

"Once we receive the data, we'll use it to implement different strategies," Deitrick said. "We'll look to see changes and to alert us if new forms of opioids are coming in."

New, synthetic strains of fentanyl are resistant to the overdose antidote and have been implicated in increasing deaths. Early alerts to the presence of this compound in the community could aid intervention and thus drive down opioid mortality rates. Using an open data approach, the city could use its website and other real-time

communication to warn the public and prepare emergency responders. “We’re cautious about how law enforcement might use this type of information because wastewater data isn’t specific enough to trace back to a person or even a neighborhood, nor is that the goal,” Deitrick said. “The goal is to stop people from dying and reduce opioid use.”

Making the Data More Useful

As an expert in GIS mapping, Deitrick can attest to the fact that people can more easily relate to data when they see it on a map.

“You don’t have to be a statistician to be able to interact with the data

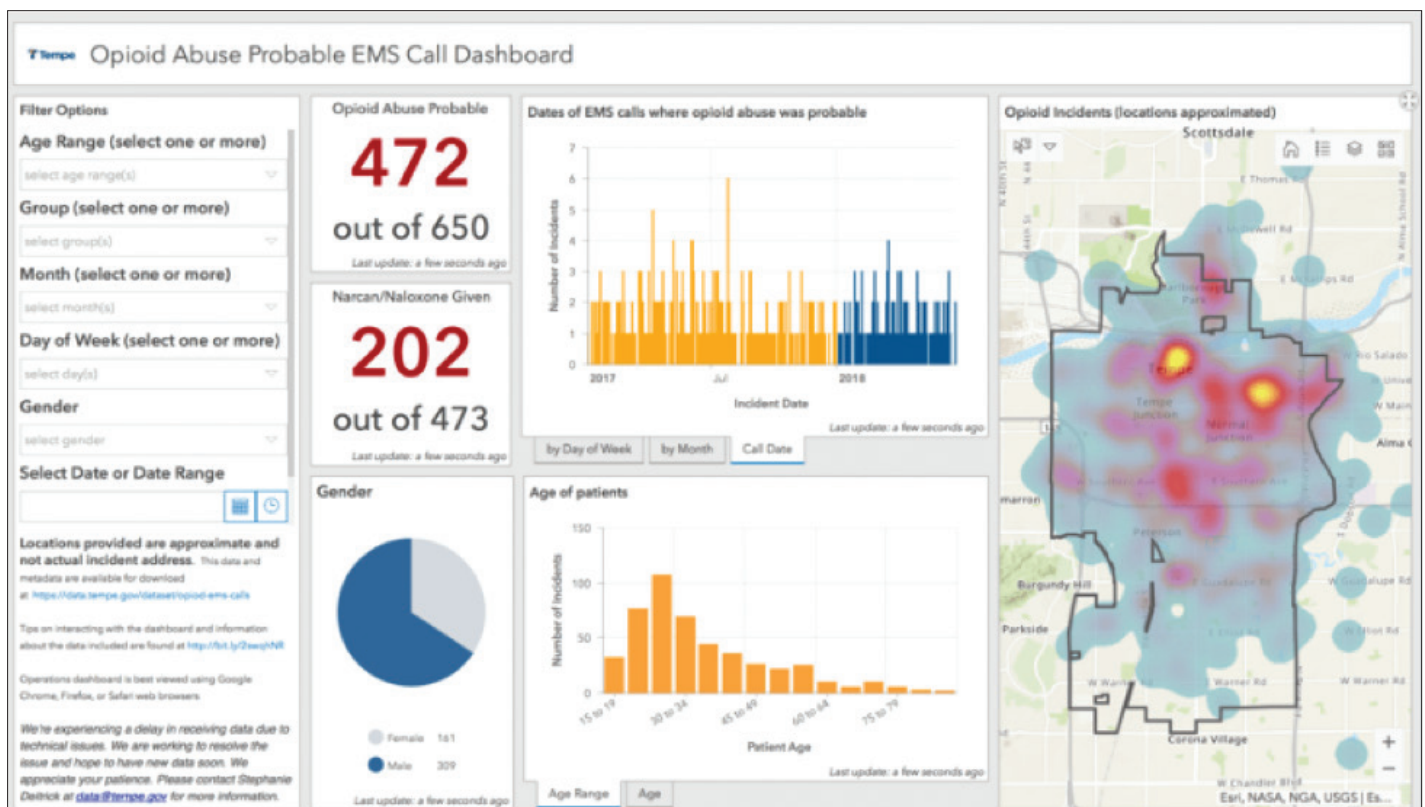
and glean ideas,” Deitrick said. “First responders who are out in the field and clearly have other things to focus on get really interested to see what’s going on across the city.”

Tempe worked with the ASU researchers to better understand the data and to ensure that collection methods preserved anonymity. The researchers collected six months’ worth of samples before the data was provided. The city is working on creating additional map-based dashboards using this data.

“I’m hoping other cities get more comfortable putting this data out on their open data portals,” Deitrick said. “We need to focus on the benefits of

transparent data to help overcome concerns that sharing it may highlight that there is a problem.”

View Tempe’s story map (go.esri.com/FightOpioidAbuse) about its opioid addiction work. Learn more about the Opioid Mapping Initiative by going to go.esri.com/MappingInitiative.



↑ The City of Tempe’s Opioid Abuse Probable EMS Call Dashboard provides a way to explore opioid-related emergency medical services (EMS) call data by using interactive charts and maps.

Record Midterm Election Turnout for Collin County

Introduction

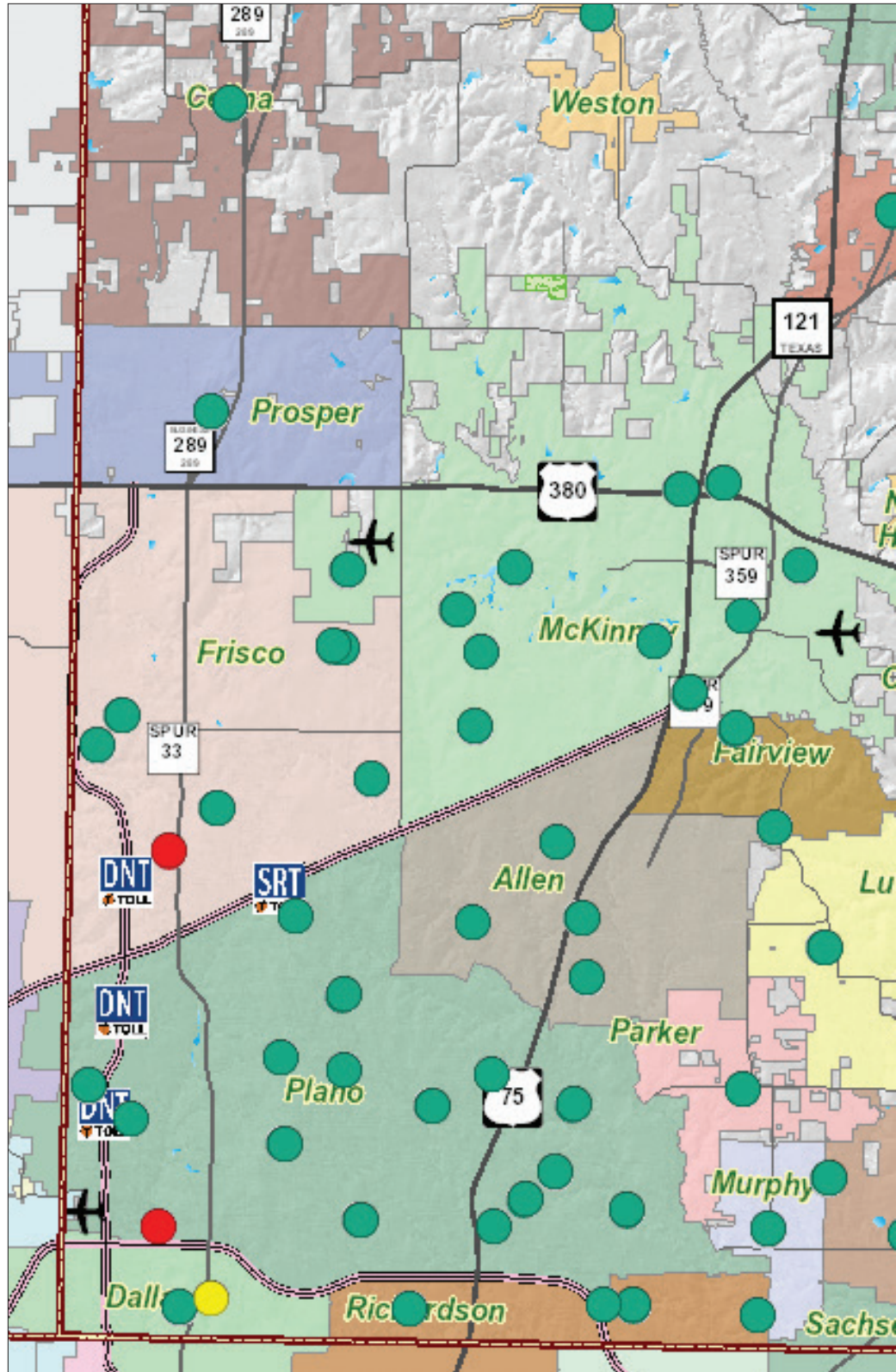
In 2018, Collin County expected large numbers of residents to show up at polling places during midterm elections. To encourage this, county officials wanted to provide a more modern voting experience that saved voters' time and made the best use of every polling place. They created an easy-to-use web app that helps voters find polling places with short wait times.

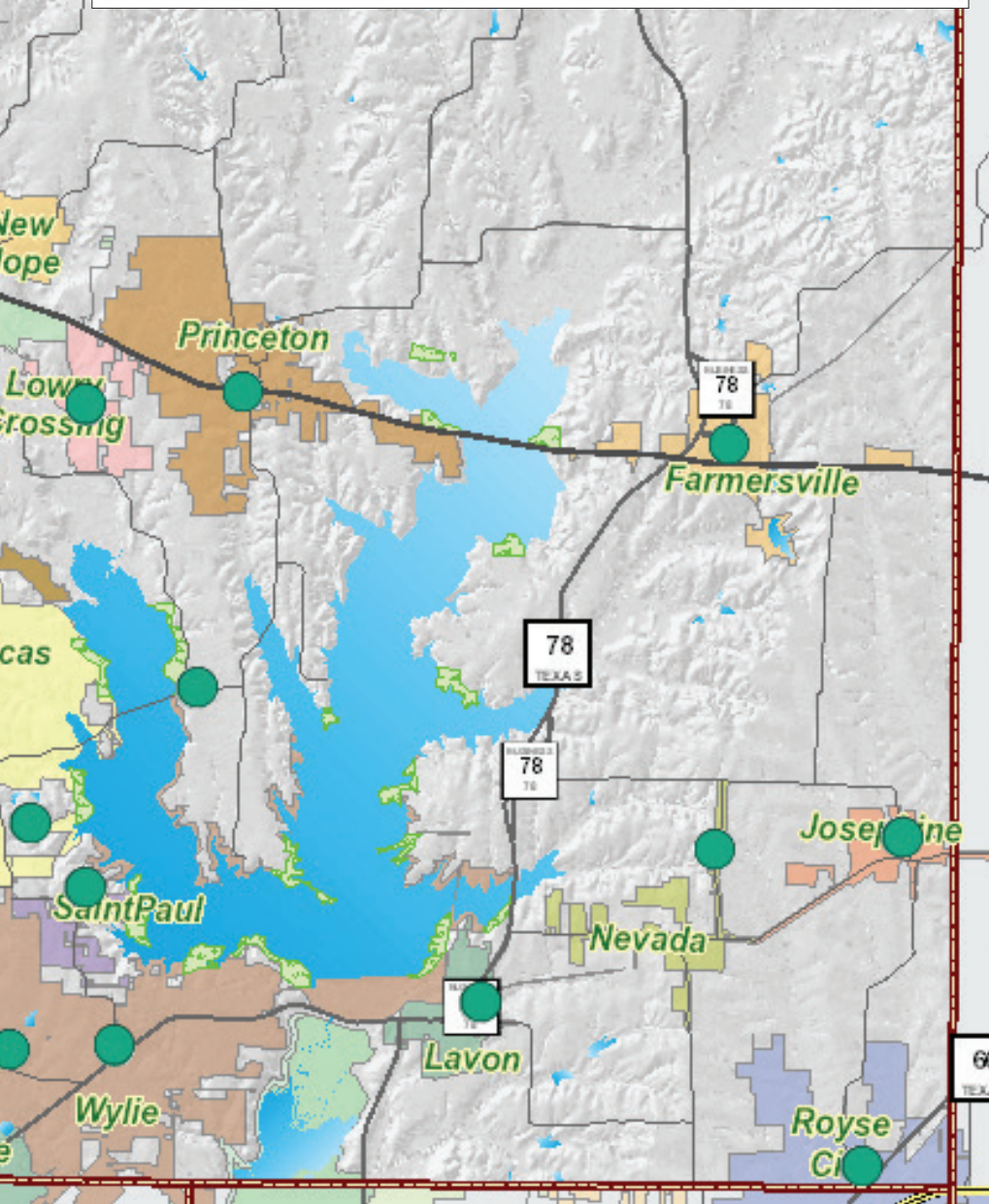
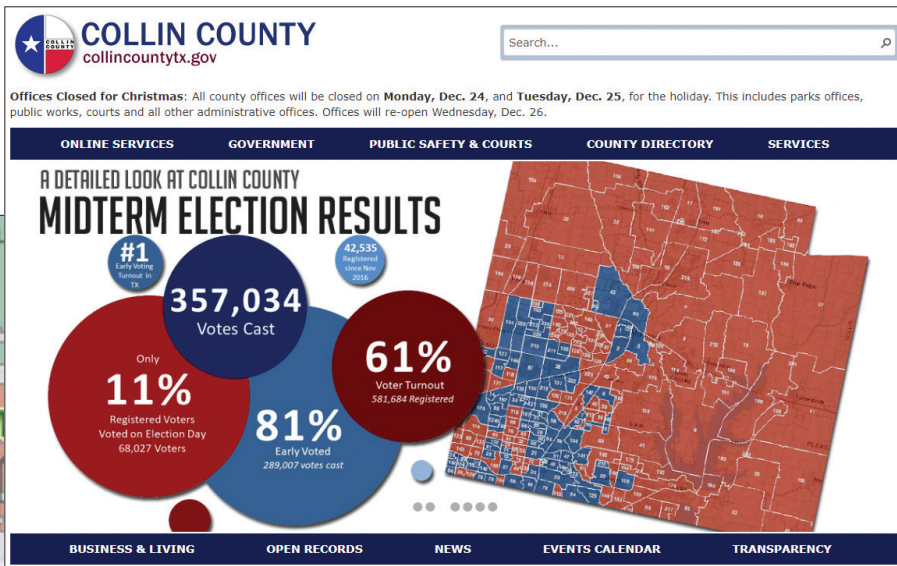
The Challenge

During previous elections, the county realized that some voting centers were overflowing with people while others were practically empty. After researching the problem, it became apparent that voters often rely on "muscle memory" and their past voting experience to find polling places. In other words, they simply go to the polling place where they voted the last time, even if they must wait in long lines to cast their ballot. Old voter habits caused overcrowding at certain polling places and frustrated voters in the process. What the county needed was to give people a simple way to find and get to polling places with the shortest wait times, so that voters could get in and out fast and then carry on with their day.

"Making it easier for people to get to their polling place using GIS is one thing we can do to reach out to citizens in a friendlier way."

Tim Nolan,
Senior Applications Manager
Collin County, TX





The Solution

To improve the voting experience, the county teamed up with an Esri partner to modify Esri's Polling Place Locator solution template, a configurable web application that residents can access on the government web page and on their mobile devices, to view their specific vote centers. The Collin County GIS team configured the solution template to show wait times at all voting centers and turn-by-turn directions from the user's current location to the appropriate polling place. The configurable template is connected with Esri's ArcGIS Online, a software-as-a-service solution that helps local governments understand locations and relationships with maps and visual representations. ArcGIS Online provides the ability to collect location data, organize it, and maintain accurate details about assets, such as polling places. Esri's Polling Place Locator is a free web-based template that ArcGIS Online users can quickly download, configure, and deploy on their websites and make available to the public.

The Results

During the 2018 midterm elections, people used the app to find the nearest polling location or the nearest polling place with the shortest wait time. The Election Polling Place Locator web page received nearly 90,000 page views, which showed that the app was solving a real need for citizens. During election day, the app generated over 110,000 routes, helping residents navigate to their polling places. As a result, Collin County had the highest early voting turnout in the state of Texas and 61 percent total voter turnout, nearly as high as the presidential elections.

Collin County also uses Esri interactive mapping to help citizens learn about precincts for voting, commissioners, justices of the peace, and constables, as well as federal, state senate, and house of representatives districts.

For more information, visit
go.esri.com/Elections-CC.

Prince George's County Saves Time and Money with ArcGIS

Introduction

The Board of License Commissioners (BLC) is responsible for managing and inspecting all liquor license establishments within Prince George's County, Maryland, a suburb of Washington, DC. BLC wanted to reduce costs by streamlining the inspection process and simplifying inspection data management. To solve the problem, BLC worked with the county GIS department to deliver an integrated suite of web-based apps that eliminated costly paper work processing and increased efficiency by 65 percent.

Challenge

Previously, BLC inspectors used paper-based surveys to review and evaluate the license status of every liquor store in the county. While the inspections themselves weren't complicated, managing the data associated with the inspections had become costly and inefficient.

Inspectors used paper maps to find locations and recorded inspection notes on paper forms. But handwriting the

"ArcGIS has shown how, in the future GIS could change BLC business practices—with digital automated forms and efficient workload management for inspectors and their supervisors."

Tewodros Heilegeberel,

Senior GIS Analyst for the Office of Information Technology

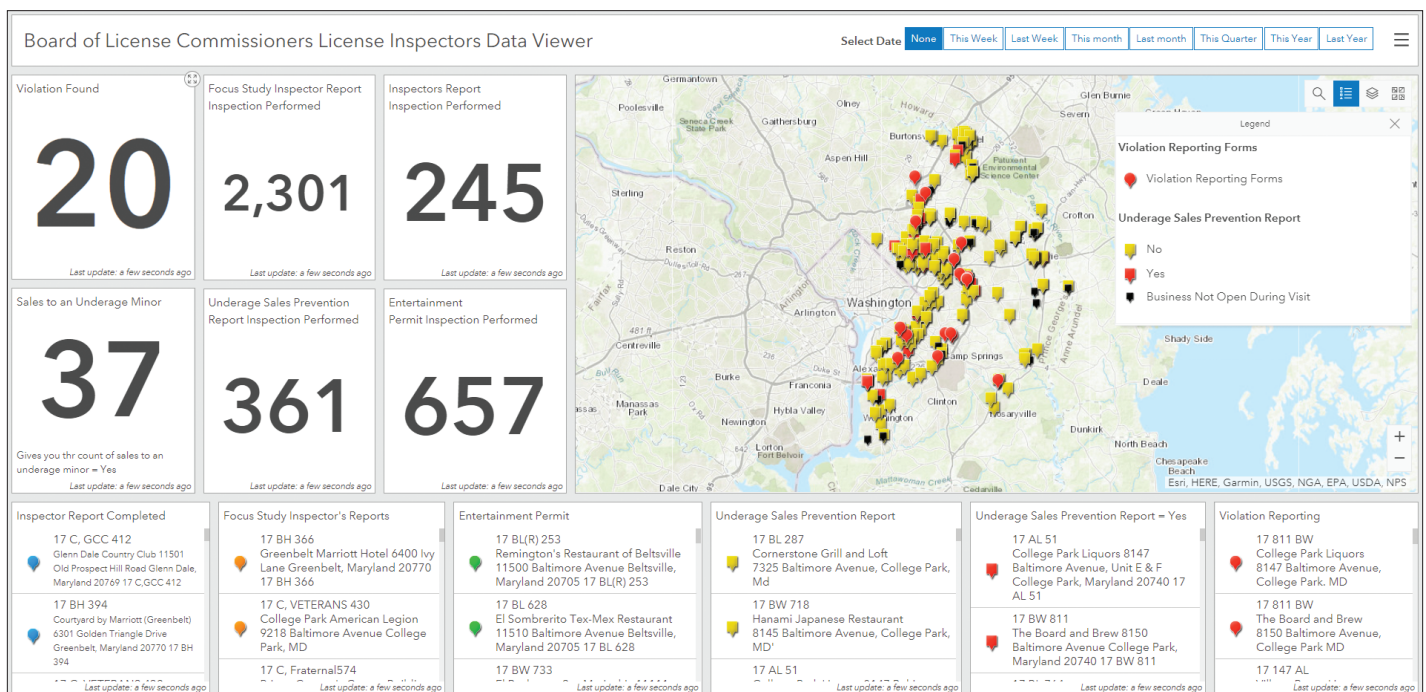
establishment's ID number and other information propagated errors in the data. The inspectors used digital cameras to photograph both the properties and the forms to keep the information organized. At the end of the day, they'd turn in the surveys and photos, which would be manually entered into a computer system, usually at night, taking about 30 minutes per survey.

Not only was this process inefficient, but on average, only about 70 percent of the surveys were entered each night, which meant that the remaining surveys were added to the next day's workload, creating an endless backlog. Over the course of a year, this backlog would amass an additional four weeks of data

entry work. To make matters worse, the paper survey forms were archived in boxes and stored in a room, which made it difficult to find and review past inspection information and caused inspection deadlines to be missed.

The process of assigning inspections and reporting the results was also problematic. Tasks were assigned via email, and reports had to be assembled manually. Inspectors were spending hundreds of hours each year managing the data and photos. Often, inspectors were unable to complete their reports until days after the inspection.

BLC realized that the entire inspection process needed to be revamped.



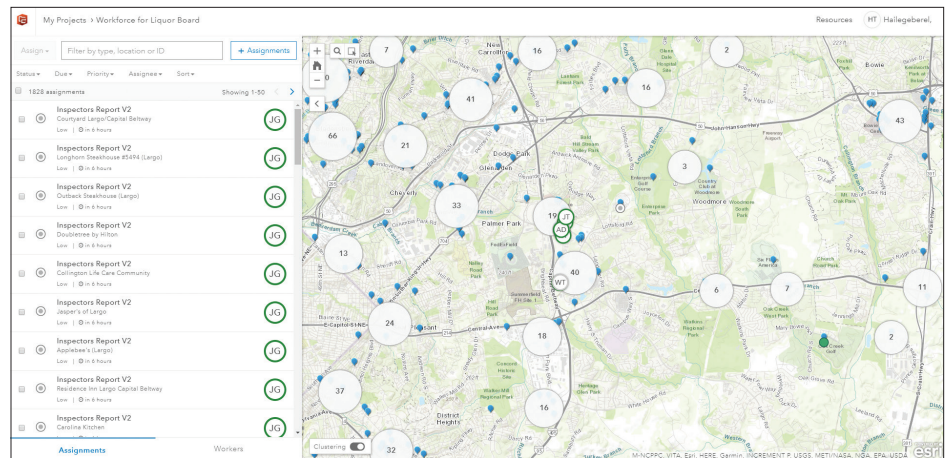
Solution

BLC asked Prince George's County GIS department for a more efficient and less costly solution.

First, the GIS department used Esri's ArcGIS to map the location of every establishment in the county that had a liquor license. Next, staff used a combination of ArcGIS configurable applications to enable mobile data collection and automate reporting.

Using iPads, inspectors receive assignments from supervisors via Workforce for ArcGIS. The Workforce app streamlines the process of managing and assigning fieldwork and allows inspectors to have all their maps and assignments on one mobile device. Inspectors use the app to complete to-do lists while supervisors track progress.

For data collection, the inspectors use Survey123 for ArcGIS. Survey123 is a formcentric app for creating, sharing, and analyzing surveys. In this case, the GIS department created smart forms for each type of inspection, with predefined



questions based on logic, which makes filling in the answers an easy and intuitive process. Inspectors use the iPad camera to capture photos. Completed surveys and associated photos are uploaded to ArcGIS, fully organized.

Back in the office, supervisors use Operations Dashboard for ArcGIS. The dashboard provides a real-time operational view of what inspectors are doing in the field and allows supervisors to monitor key performance indicators, such as the number and locations of completed inspections. BLC supervisors also use Operations Dashboard to generate weekly and monthly reports of all inspections.

Results

With a revamped and modern inspection process based on ArcGIS, BLC is seeing significant cost and time savings. Surveys are loaded automatically into ArcGIS, eliminating the manual data entry workflow and backlog. It's no longer

necessary to archive and store paper surveys—plus BLC now has a usable storeroom.

The inspection process is more efficient, too. Inspectors complete 65 percent more inspections a day and have cut in half the time needed to finalize a survey. All the maps and tools are encapsulated in one, lightweight device.

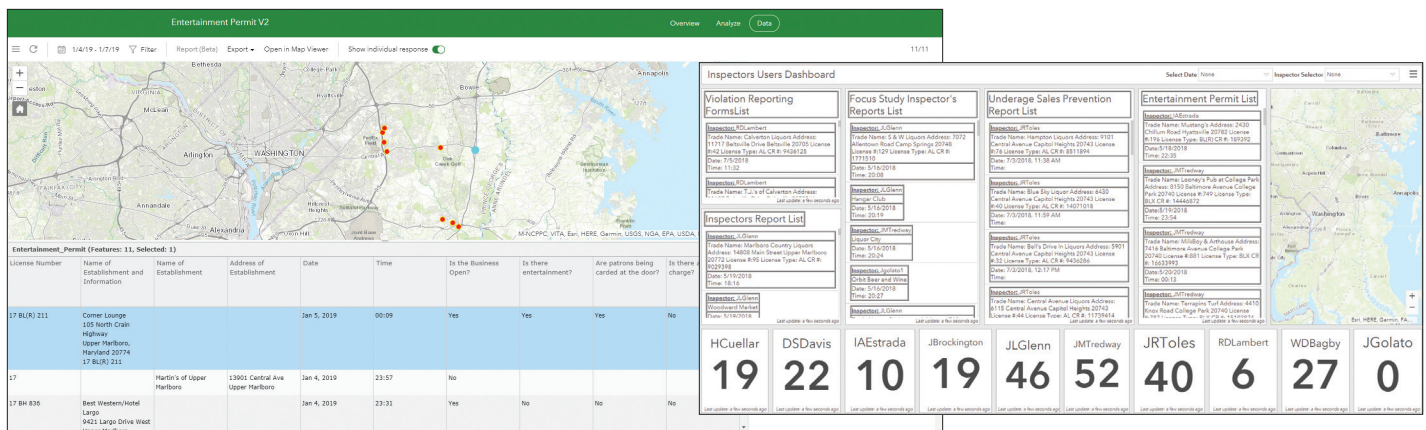
The new process has also introduced flexibility into the daily work experience. If an inspector's tasks are all completed early, a supervisor can commit or reassign tasks based on workloads.

BLC is planning on adding Navigator for ArcGIS to the inspection process. Navigator provides optimized routes to the next assignment with turn-by-turn directions, which will reduce fuel costs and the time spent between assignments.

To learn more about how ArcGIS is being used in public health, check out go.esri.com/Inspection.

“With the use of ArcGIS, BLC is able to save time and money while being more efficient and communicative with stakeholders.”

Patrick T. Callahan,
GIS Division Chief for the Office of Information Technology





380 New York Street
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