Esri News
for State & Local Government
Fall 2018

Utah Involves Public in Redistricting

With the Esri Redistricting Solution, the State Increased Transparency of Revising Legislative Boundaries

Redrawing representative districts in the United States is a contentious process fraught with acrimony. Because of the political influence at stake, the exercise regularly leads to allegations of unfairness. Nevertheless, after each US Census is taken, states must examine—and potentially redraw—their congressional districts.

For the last round of redistricting, in 2011, the State of Utah took a novel step toward mitigating criticism: its redistricting committee made the process much more transparent to better educate citizens about how it works. Using the Esri Redistricting solution, the committee opened the proceedings to the public, revealing all the intricacies involved in redistricting and displaying the many obstacles to formulating a solution that satisfies everyone.

Opening Up Redistricting

Following the 2010 US Census, Utah—like all other US states—had to reconsider how its congressional districts were split up. State legislators wanted the public to be involved in the process, but

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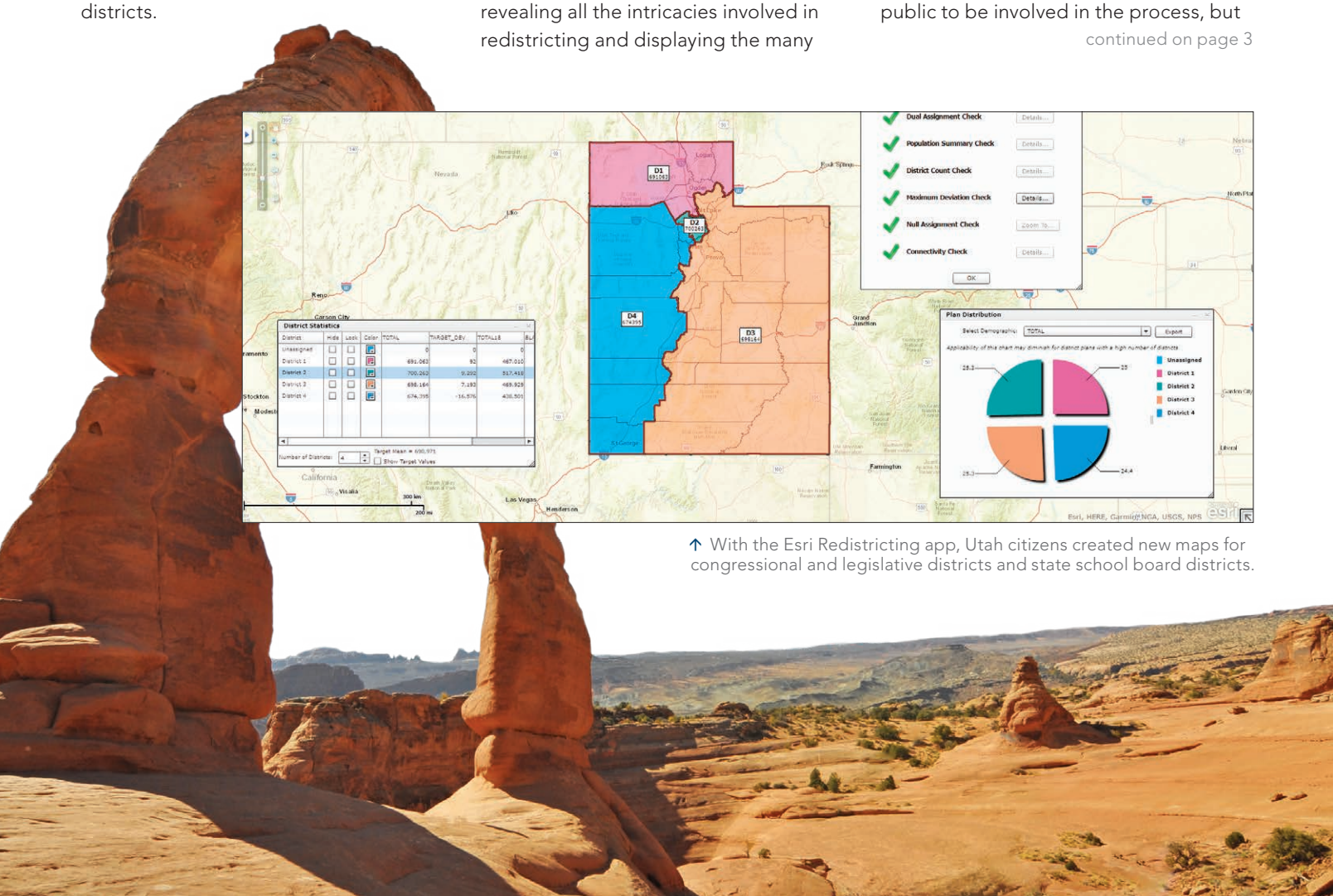

↑ With the Esri Redistricting app, Utah citizens created new maps for congressional and legislative districts and state school board districts.

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Utah Involves Public in Redistricting

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online district mapping tools hadn't been available in prior redistricting years.

Late in the planning stages of its 2011 efforts, the state's redistricting committee saw a demonstration of Esri Redistricting and decided to implement it. This would allow citizens in Utah to create and submit their own statewide redistricting plans online.

Working with Esri, legislative staff customized the solution slightly to ensure that users drew their redistricting plans according to the same requirements the state legislature had to meet. Shortly after rolling out the public-facing solution, the committee created a companion website that allowed citizens to explain their plans and comment on those submitted by others.

Legislators and analysts drew legislative boundaries for the state, using the autoBound extension for ArcGIS Desktop from Esri partner Citygate GIS. Meanwhile, citizens all over Utah could go online to create their own maps for congressional and legislative districts and state school board districts.

"This was the perfect citizen engagement opportunity," said Richard Leadbeater, the industry solutions manager for state government at Esri. "Opening up the process of redistricting to citizens helped people realize that redistricting is hard. They got to see that it's difficult to start with a specific idea for your city and then come up with a fair, equitable plan for the entire state."

Making New Solutions

Citizens accessed the Esri Redistricting app via a web browser and, with a user name and password, they could either create plans or collaborate on and edit existing ones.

To make a plan, users first selected census-designated geographic areas—such as counties or groups of neighborhood blocks—of various sizes. Indicators and reports within Esri Redistricting allowed users to visualize the demographic breakdown in each of their proposed districts and see what would happen if they made changes to their plans.

In addition to mapping out their own redistricting solutions, users could create online groups to share and modify their plans. They could also use the companion website to make public comments about the pros and cons of various plans.

When users considered their plans complete, they locked them to prevent any further revisions and submitted them, via the app, directly to the redistricting committee for review.

Legislators also opened up the process to members of the media, since that tends to be where a lot of criticism comes from. Using the same computers and desktop tool that legislators employed, journalists were able to create plans of their own, and legislators were present to answer questions. This way, members of the media were able to get a better understanding of how redistricting works.

Achieving Even More Transparency

A thousand citizens registered to use the site and submitted a total of 323 plans. Of those, 271 met the criteria for completeness, which included making the districts contiguous and relatively compact and with population counts that are as close to equal as possible.

The committee held 17 public meetings throughout the state so that legislators could get more citizen input on redistricting and make the process even more transparent. Citizens who had submitted plans were invited to attend these meetings to discuss their ideas in person.

"If someone who created a plan came to a public hearing, we could bring their plan up online and project it on a screen where everyone could see it," said Jerry Howe, the managing policy analyst for the Utah State Legislature. "[Citizens] could then discuss their plan and make arguments for it."

Creating a Smoother Process

Even though there were still disagreements during the 2011 redistricting process, the Esri Redistricting solution provided the public with unparalleled visibility into how the process works, and the redistricting committee got unprecedented access to information about what Utah's citizens wanted. According to Howe, participants gained an appreciation of how drawing statewide congressional boundaries works, and legislators received a variety of options to consider.

"The plans [citizens] drew were helpful," Howe commented. "There was a plan for the state school board drawn by a member of the public that, with some minor modifications, was adopted."

Howe believes that public participation in redrawing Utah's state districts was beneficial to the overall redistricting process.

"I think the public and the media understood the problem better after using the Esri tool," he said. "It eliminated some criticism that was unfounded. Everyone who submitted a complete plan learned that it is really easy to draw the first part of the plan—but the real lesson everyone learned was that it gets really difficult to draw the final districts without harming compactness, city and county boundaries, and communities of interest."

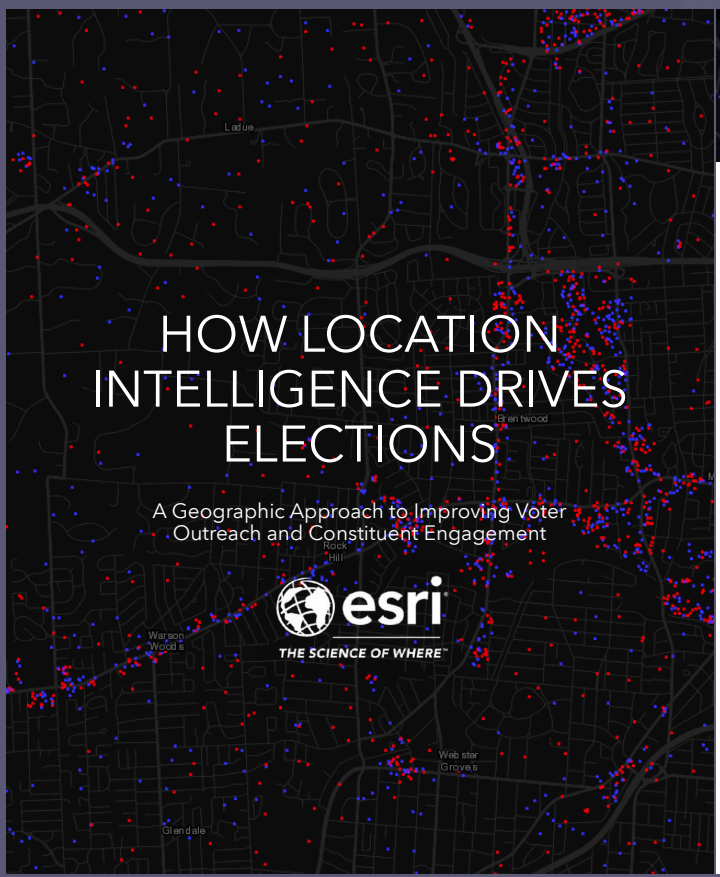
To learn more about Esri Redistricting, go to go.esri.com/redistricting.

A Geographic Approach to Improving Elections Outreach

Location intelligence has always been the foundation of the electoral process. Understanding where voters are in relation to the things that matter most to them is a fundamental part of using election data. The key to a well-run election is in managing and converting this election data into useful information for citizens who are eligible to vote. The best way to do this is through the use of geographic information system (GIS) technology. A location-based strategy will allow state and local governments to

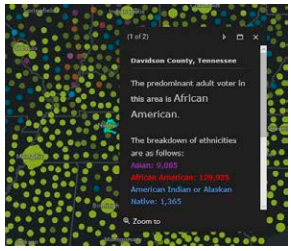
- Mobilize voters.
- Ensure real-time election results.
- Improve constituent engagement.
- Revitalize how election information is shared.
- Deliver election analytics.
- Bring clarity to the redistricting process.

To learn more, visit
go.esri.com/electionsebook.



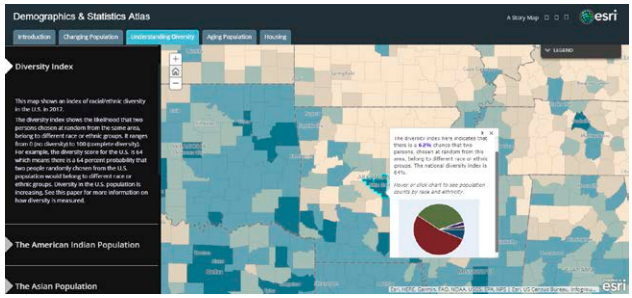
THE INTELLIGENT MAP

Intelligent maps live on the web. They are the front-facing representation of numerous data sources presented in an easy to understand way. They invite interaction, exploration, and comparison of voting results, precinct by precinct, without requiring special knowledge or technology other than a browser. For example, intelligent maps let you drill into data and investigate variations hidden within final totals and see voting patterns. A map like this would be valuable to politicians looking for battleground areas or anyone who wants to see how people vote from city to city.



Smart Mapping

Accurate demographics play an important role in elections for understanding changing populations, diversity, and aging, as shown by the Demographics & Statistics Atlas story map.



Demographics and other information relevant to elections are provided as web maps.

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The Rise of the Tech-Savvy Executive

By Christopher Thomas, Director of Government Markets

As a government executive, you should be asking yourself the following: What percentage of my operations and workflows are using technology to improve efficiency? Do I have a plan to raise the digital proficiency of every department? Better yet, how do I compare to my peers?

The attention that executives have paid to technology has always come in waves. Attention is often driven by citizen inquiries during disaster recovery, by threats of cyber attacks, by hot trends like civic engagement or e-government, and by customer relationship management (CRM) and enterprise resource planning (ERP) efforts. Some is driven by trends like the Internet of Things, big data, or information delivery to a mobile society. All too often, management does not stay engaged and leaves it to others, saying, "I've got people for that."

The time has come for the rise of the tech-savvy executive: an individual who innately understands the need to boost the use of technology at the same level across the entire organization. No longer can we survive off a couple of project wins. We need to shift how we engage with citizens. We need staff that remains agile and connected. Decision-makers need to move from relying on static reports to using real-time operational dashboards for accountability and transparency. We need to take care of the expectations of employees and stakeholders. Most importantly, we need executives who prioritize the operational infrastructure that will keep organizations moving forward. We are talking about developing a management strategy that will profoundly change an organization—one that makes you a standout among your peers.

So the question is posed: How are you doing, really? Do you have one or two cool apps you can cite as being beneficial, or can you reference a digital transformation that is driving you forward? Unquestionably, there may be resistance to investing in IT. But in the long run, you will see a return on investment through increased customer engagement and cost and time savings.

The tech-savvy executive will recognize that a strong strategy will revolve around several technologies working in unison. One platform that has been consistently recognized as foundational is GIS. Mapping and spatial analysis have been used successfully to answer many of the important questions posed here.

GIS is transformational in that it requires a shift in thinking about business problems. It proposes the question of how location impacts workflows, analysis, and engagement in the search for new truths.

Through The Science of Where, organizations can address social inequities, improve citizen engagement, communicate through geographically centered data analysis, look at where expenditures and revenue gains can be adjusted or realized, and do much more.

Tech-savvy executives need to consider doing the following:

- Organize data—Break down silos and encourage collaboration by centralizing GIS data to make better-informed decisions and reduce duplicate efforts.
- Modernize workflows—Look to configure and deploy apps that help modernize workflows across multiple departments.
- Empower field operations—Optimize your mobile workforce to be constantly connected as an extension of your back office.
- Improve logistics—Leverage network analysis for more efficient routing and navigation.
- Make data-driven decisions in real time—Use mapcentric operations dashboards that support spatial thinking and track events as they occur.

To learn more, go to go.esri.com/ITSavvy.

Connecting Government to Improve Government

GovLoop is a community of more than 270,000 federal, state and local government employees and government professionals. Our mission is simple: connect government to improve government. We provide free and educational resources on critical topics facing government, including the latest GIS trends and insights.

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Zapping Zika with GIS

The work of the New York City Department of Health and Mental Hygiene (DOHMH) is broad ranging, from administering inspection grades for dining establishments to mitigating infectious disease outbreaks. With over 7,000 employees serving more than eight million citizens, DOHMH is one of the largest public health agencies in the world. Every year, DOHMH monitors over 70 infectious diseases. As the threat of Zika virus loomed over the United States, DOHMH used GIS technology to target messaging in potentially at-risk populations in New York City (NYC).

The Challenge

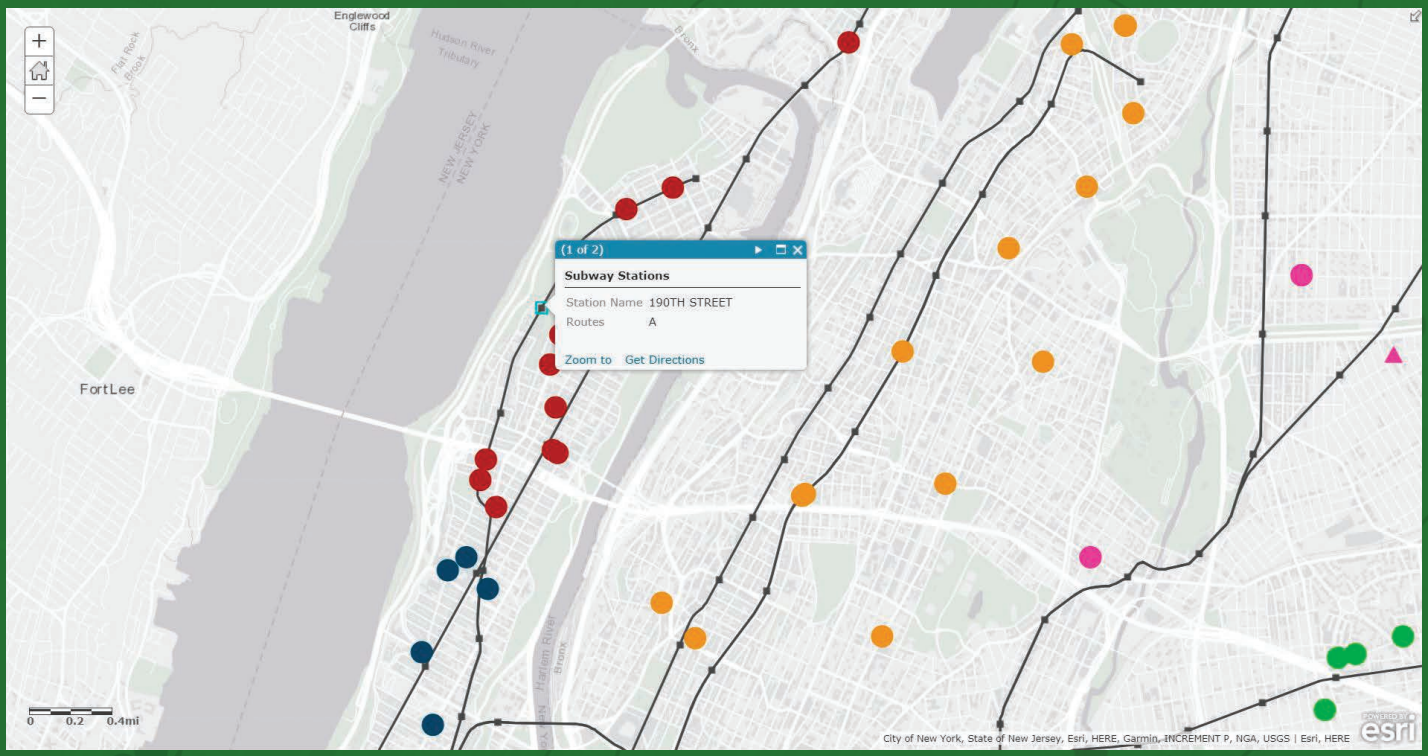
Since NYC is a major travel hub, DOHMH staff knew they had to prepare for potential Zika virus outbreaks—even before local mosquito-borne cases were identified in Florida. To improve provider-to-patient communication regarding travel recommendations, DOHMH needed to identify populations potentially at risk and reach out to obstetrics and gynecology (OB-GYN) providers in these neighborhoods. To ensure messaging was getting to patients, DOHMH needed to canvas 178 OB-GYN clinics with very limited resources (11 two-person teams in one business day using public transit).

The Solution

DOHMH staff used Esri ArcGIS technology to identify at-risk neighborhoods. With ArcGIS, they developed a risk index using the following data layers:

- Population density of first-generation immigrants in NYC from Latin American countries where there is local Zika virus transmission—since many New Yorkers traveled to and from there
- Water and tree canopy density in NYC—since mosquitoes, the vector of Zika virus, may aggregate in these areas
- Density of arboviral (infections caused by viruses spread by infected insects) cases for the past three years in NYC

Next, using spatial analysis, clinics were assigned (and, therefore, travel routes optimized) for canvassing teams. The analysis assigned clinics to a team by minimizing travel distance to public transit stations, public transit routes, and at-risk neighborhoods.



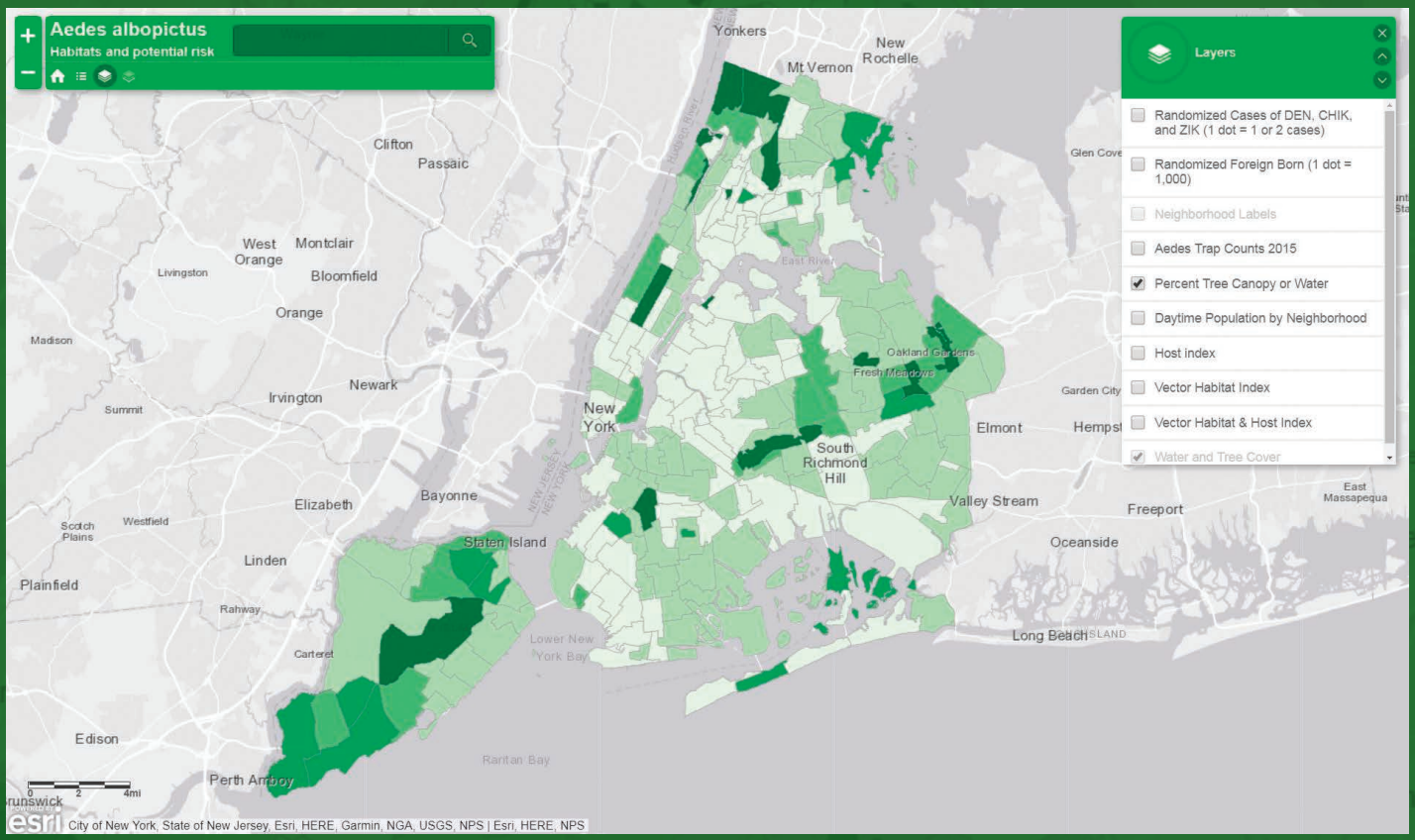
The Results

Using ArcGIS, under Dr. David E. Lucero's leadership, DOHMH staff gained a detailed understanding of NYC neighborhoods at potential risk for Zika transmission. They used the analysis to educate and communicate with elected officials, providers, patients, and travelers. Additionally, they identified OB-GYN clinics that were best suited to inform patients about travel risks and preparedness. They were able to predict which areas were most at risk of local Zika transmission and which clinic locations would likely service at-risk populations. In one business day, 11 teams used public transportation to visit a total of 178 OB-GYN facilities across 10 neighborhoods. A subsequent canvassing operation yielded similarly effective results; in half a business day, four teams visited 70 facilities across five neighborhoods.

Ultimately, GIS empowered DOHMH staff to better understand the spread of disease in their community to respond faster and more effectively.

> "Now we're able to interact with the data and connect with the neighborhood, making [residents] more aware of their disease risk."
>
> **David E. Lucero, PhD**
> Director of Data Unit, NYC Department of Health and Mental Hygiene, Division of Disease Control

Interested in using GIS in a similar way as New York City?
Go to go.esri.com/ZikaRisk.



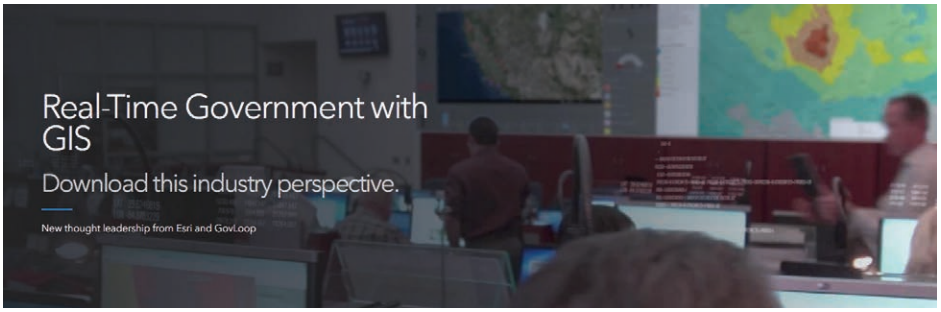
How Government Accelerates Decision-Making with Real-Time GIS

The goal of a real-time government is to make better data-driven decisions the moment something happens, and the path to that involves using and analyzing real-time data. To do this, it is necessary for governments to constantly have data flowing in from sensor data feeds and devices. Managing this constant stream of data is the biggest challenge for governments that are moving toward developing real-time information systems.

Real-time GIS makes consuming, aggregating, and analyzing streaming data from sensors, devices, and social media feeds easy. Governments can gain the power of knowing what is happening as it happens, react and make smarter decisions faster, and get alerts when events of interest occur. Get the industry perspective from Microsoft, GovLoop, and Esri on the steps your organization can take to become an effective real-time government.

"Far and away, the biggest challenge we have . . . is synthesizing data in an incident."

Dan Bout
Assistant Director of Response at California Governor's Office of Emergency Services



If you are interested in how GIS accelerates real-time decision-making, get the industry perspective at go.esri.com/RTGov.

Health Equity Summary

Health inequity, the inequalities in health between groups of people, is one of the most complex social issues facing communities today. Many factors play into health equity: access to healthy foods, quality health care, jobs, and community support, among other components. These widely varying factors have one thing tying them all together: location. By utilizing GIS, local governments can implement a location-based strategy to map and understand the factors that affect the quality of health within communities. Esri and GovLoop have partnered to give local governments the following six-step plan to integrate GIS into their tactics for moving toward a healthier future:

1. Organize existing data.
2. Collect new data in real time with Esri mobile solutions.
3. Communicate findings with operational dashboards.
4. Efficiently deploy tactics and allocate resources with location intelligence.
5. Inform decision-makers with GIS.
6. Educate citizens through story maps.

Nobody should be subject to an unhealthy life because of their location.

To learn more about the role of GIS in health equity, get the industry perspective from HERE, GovLoop, and Esri at go.esri.com/GISinHealthEquity.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Drone Workflows Save OCWA $6,500 per Tank Inspection

Onondaga County Water Authority (OCWA) serves approximately 350,000 customers in portions of five counties in central New York. The service area of OCWA includes 2,200 miles of water mains and 58 water storage facilities, delivering 39 million gallons of water each day. OCWA draws water from two sources: Lake Ontario and Otisco Lake.

The Challenge

OCWA wanted to modernize its systems and workflows to increase efficiencies, mitigate risks, and share information faster. Traditional workflow methods for tank inspections, surface water quality observations, and project planning were identified as areas that needed modernization. The utility planned to revolutionize the way it operated to achieve its goals.

The Solution

OCWA chose a GIS software solution using drones. OCWA uses Drone2Map for ArcGIS to transform drone-captured photographs into actionable information products that can be used for analysis and decision-making. Since Drone2Map for ArcGIS is connected to OCWA's mapping portal, these products are easily shared as web maps, apps, and scenes. OCWA uses the DJI Phantom 4 Pro unmanned aerial system (UAS), which is compatible with an array of mobile applications. A mobile device is used in conjunction with the UAS controller to monitor the drone in real time as well as enable and configure various flight and camera settings. The mobile applications currently used by OCWA are the DJI GO 4 app as well as Map Pilot. Each application has its own feature lists, and both allow for automated flights and programming.

"Drones are highly maneuverable and can capture a wide range of angles at varying heights and distances. The 4K camera used on the drone allows for extreme detail of assets. Even the largest tanks in our distribution system can be captured in under 20 minutes with 100+ HD images capturing every square inch of the asset."

Will Bianchini
Systems Analyst, Onondaga County Water Authority

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Drone Workflows Save OCWA $6,500 per Tank Inspection

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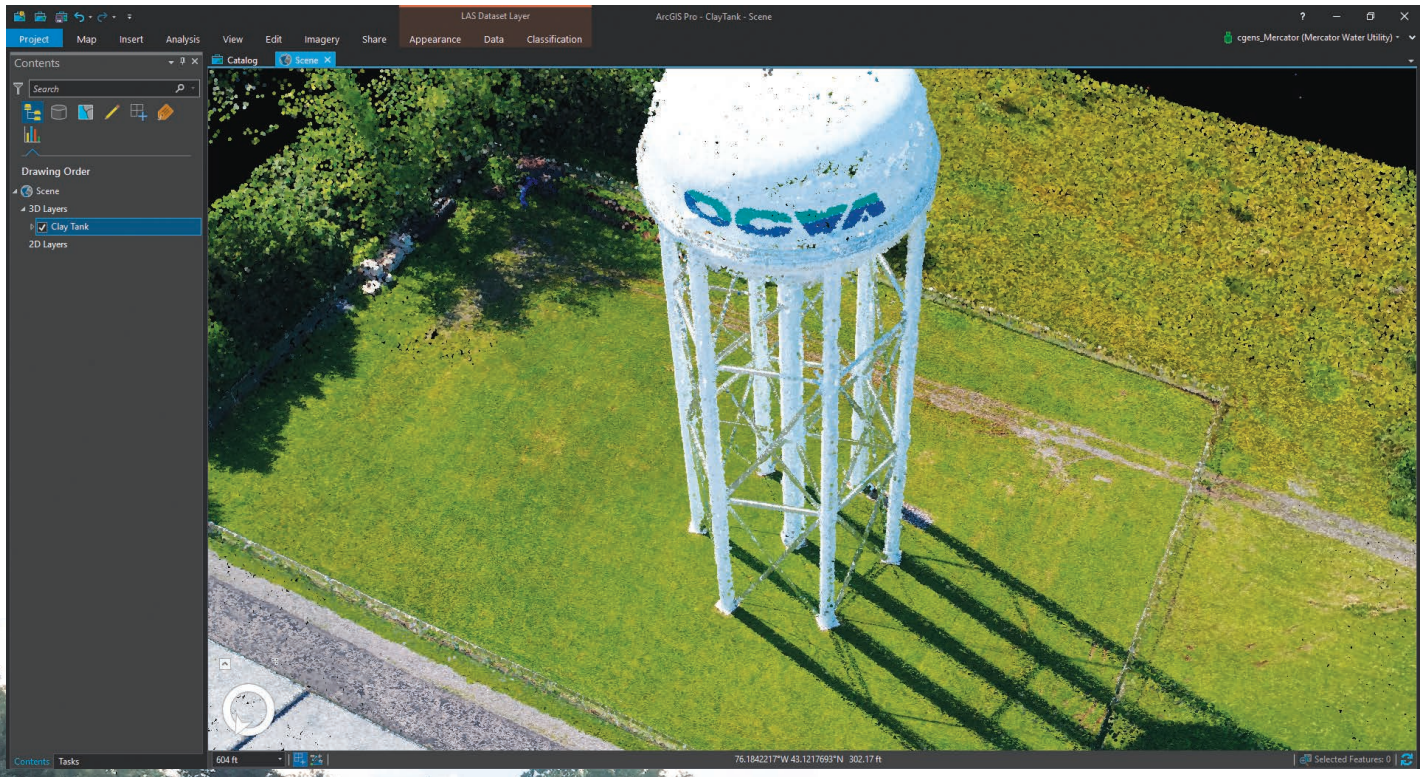

The Results

The drone-based solution provided a quick turnaround with unique, specific viewpoints of tanks and other areas of interest. The solution enabled OCWA to put the drone to work in weather conditions where staff would consider inspections to be difficult to complete. It supports planning and maintenance by providing staff with the ability to easily review an entire project area. Aerial photography can be made available to stakeholders to monitor the work done, justify costs, plan for risks, and formulate mitigation strategies.

This solution has led to budget savings of approximately $6,500 per tank inspection by eliminating historically expensive and not very timely data collection. It has also resulted in savings related to harmful algal bloom research.

Want to learn more about what Drone2Map can do for water utilities? Check out go.esri.com/OCWA.

Trickle-Down Taxes and Local Government

With the US Tax Cuts and Jobs Act of 2017 enacted late last year, pushing more government responsibilities to the states from the federal government will continue. This is both good and bad news, but the trickle-down effect will continue. The political consequences of raising taxes will force states to push some of that responsibility to local governments—and we know where local governments get their revenue: property tax.

Local governments have a poor appetite for raising taxes, and the public resists higher taxes as well. So if we want to keep tax rates fixed, what's the solution? It's better data, better analysis, and better communication.

I'm forcing myself not to use the overused phrase "do more with less," but efficiency improvements are important. Efficiency is one return on technology investment, but with new mandates and requirements, efficiency gains are essential to sustain and modernize government services within existing budgets. Another return on investment (ROI) is delivering information the way taxpayers and citizens now consume it—on mobile devices and with easy-to-use maps and apps. This is more than just ROI—it's an expectation of the public.

Increasing revenue without increasing taxes isn't a new idea, but it's now a reality for today's assessors. Most assessors use external datasets to help ensure that property data is current and accurate. They're identifying untaxed improvements with satellite and aerial imagery, resulting in increased revenue. There are new data services, including change detection services, that efficiently direct assessors where to look for untaxed improvements. There are a lot of tools in the GIS toolbox.

Most assessors report over 60 percent of appraiser time is spent in the field, which makes this a good area for realizing efficiencies. With new GIS apps, assessors easily collect up-to-date street-level photography with cost-efficient vehicle-mounted, consumer-grade cameras. By integrating field force management and routing tools with field appraisal practices, assessors are increasing throughput and decreasing operating costs.

Appeals on real estate values are costly, period. Accurate data, coupled with advanced spatial analytics like kriging and weighted regression, adds ammunition for defending values. New visualization capabilities help assessors communicate values, property characteristics, and other complex information in easy-to-understand maps to the public and valuation appeals boards.

Leveraging technology, particularly GIS technology, you can use a simple and practical approach to identify untaxed property, increase operational efficiency, and improve valuations, resulting in increased revenue for local government. Many assessors don't realize that they already own many of these apps and tools as part of the ArcGIS platform.

Use all the tools in your technology toolbox—maps, apps, data, and spatial analysis—to improve your operations fairly and equitably.

To read further about GIS for taxation, download the white paper at go.esri.com/assessment.

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