

MODERN POLICE NEED MODERN TECHNOLOGY

To Harness the Power of Location
and Drive Informed Decision-Making



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Location Data Is Everywhere in Law Enforcement

*Every Law Enforcement Decision Involves Location.
Does Your Agency Have a Strategy for Data
Visualization and Spatial Analysis?*



Location Data Is Everywhere in Law Enforcement

The Evolution of Police Technology

Advances in police technology and the evolution of modern systems are transforming policing. Sensors have become ubiquitous and include automatic vehicle location (AVL) and license plate reader (LPR) technology, closed-circuit television (CCTV), body-worn cameras, gunfire detection systems, and drone platforms. Police data systems have also evolved. Computer-aided dispatch (CAD), records management system (RMS), and business intelligence (BI) technologies are becoming increasingly sophisticated and producing larger, more robust datasets. This technological revolution is giving police the ability to make data-driven decisions like never before.

The Esri enterprise GIS portal works on the premise that every police information system and dataset is inherently spatial. Think about all the police systems and the array of information they collect: calls for service, crime and arrest locations, offender records, police reporting districts, all of the sensor data collected from cameras and other systems. The common thread tying all of these systems and sensors together is location.

By implementing a holistic, location intelligence strategy for all police sensors and systems, the modern police agency can harness the power of geography to make smarter decisions.





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Key Data Challenges

Connecting systems and harnessing all this potential can be daunting. Systems are siloed, data volume can be massive, and the data stored in these systems is in a myriad of formats. And the challenge isn't related only to data volume and form; the speed with which the data is being created can also be overwhelming. As data is collected and aggregated, it must be synthesized into a meaningful form to enable smart decision-making.



Key Data Challenges

To become data driven, the law enforcement agency of tomorrow needs a foundational data strategy. Some common challenges to achieving this include:



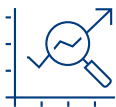
Data Silos

The most difficult and costliest hurdle to becoming data driven is the challenge of extracting the data from existing silos. This can be because solutions are often built to address specific business needs and are optimized with data that is locked down in a black box application. Further resistance can come from within the agency because of staff's unwillingness or inability to share data due to security or sensitivity concerns or the lack of a mechanism for sharing.



Security and Access

Police data is sensitive and can include not only information that law enforcement officers collect or create in the performance of their duties but also personal identity, organization, property, incident, and biometric intelligence. It can be challenging to enforce security without limiting access to agency data. Making data and analysis readily available, easy to find, and secure is key to any data-driven policing strategy.



Analytics

Once data is extracted and analyzed, how will you deliver information to agency personnel? Taking a one-size-fits-all approach to data analysis and visualization can be problematic. Police have many different missions and need the right tools for each job. Command staff do not have the same data needs as patrol officers, detectives, or public information officers. Siloed systems typically have a single user interface and cannot meet all these needs.



Real-Time Data Sharing

Police often need answers quickly, but without access to the most up-to-date data, officers are often left with an incomplete picture of what is happening around them. To leverage real-time analysis and insight, the agency needs to be prepared to react and send information to the field as quickly as staff collects it. Instead of acting on last week's or last month's data, the modern police agency needs the capability to process and synthesize big data and make it accessible immediately.



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Foundational Capabilities for Location-Based Data

ArcGIS is a full-featured mapping and analytics platform that overcomes these key data challenges. It leverages powerful GIS server technology and web-based GIS infrastructure to connect enterprise police systems and manage multiple data sources. A single ArcGIS Enterprise deployment can be installed and easily administered on your local infrastructure, hosted in the cloud on Microsoft Azure or AWS GovCloud, or accessed via Esri Managed Cloud Services in our secure environment.



Foundational Capabilities for Location-Based Data

ArcGIS contains the tools you need to meet data challenges head on by organizing all your agency's location-based data into an enterprise data portal for sharing and collaboration. ArcGIS features the following:



Data Management

Expose any data source as a GIS service and make your authoritative agency data easy to find within a central location. Store, manage, and share spatial data in an organizational portal that provides your agency with a one-stop shop for visualization, analysis, and editing tools that support key workflows and business units.



Named-User Security

Control access to sensitive law enforcement data with a named-user model that can be tied to your organization's identity management systems. With a unique, secure identity, your users can unlock the maps and apps they need—anywhere, on any device. This model controls the data that personnel have access to and keeps that data secure and accessible only to those authorized to view it.



Analytics

Esri spatial analytics will help you visualize and analyze police data within the context of its location on a map. Spatial analysis can help your agency solve complex problems and better understand not only what is occurring in your jurisdiction but also why, and then recognize where similar events are likely to occur in the future. By combining information from many sources, you can discover patterns and derive new insights from your data.



Groups for Collaboration

Groups organize maps and apps specific to each of your agency's units and their missions. As a group owner, you decide who can see your group, access its content, and create and publish data in it. Groups provide a great way to share activity information across shifts and among operational, administrative, and command staff. Updates on activities are provided from data-driven apps and dashboards as situations change.



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Configurable Tools to Support Any Mission

With the ArcGIS platform, you get out-of-the-box capabilities and a full suite of apps that support all law enforcement missions. Extend these capabilities with customizable apps for every police unit and workflow. With ArcGIS, you don't need to be a GIS expert—just drag, drop, and configure the right application to fit any task and work on any device.

Self-Service Maps and Apps—Self-service GIS allows users of every skill level to explore data and gather their own meaningful insights from your data. By creating the right self-service analysis tools for everyone in your agency, all will be able to take advantage of maps and apps that enable data-driven decision-making.

Optimized Field Mobility—ArcGIS apps help you improve police operations by pushing data and analysis out to officers in the field, enabling shared situational awareness. Mobile apps can support real-time updates and data collection to enhance officer safety and coordination of efforts by command staff.

Operations Monitoring—Operations Dashboard for ArcGIS is a configurable web app that gives command staff and line supervisors a real-time operational view of officer activities, physical assets, and events—all within a dynamic dashboard. Operations Dashboard enables situational awareness and understanding of ongoing police activities and indicators to the overall success of an operation.

Storytelling with Maps—Esri Story Maps apps combine interactive maps with a narrative and your agency's authoritative data, images, and multimedia content. Use story maps to create dynamic information products to support briefings, aid case management, distribute crime bulletins, or publish strategic reports.





Configurable Tools to Support Any Mission

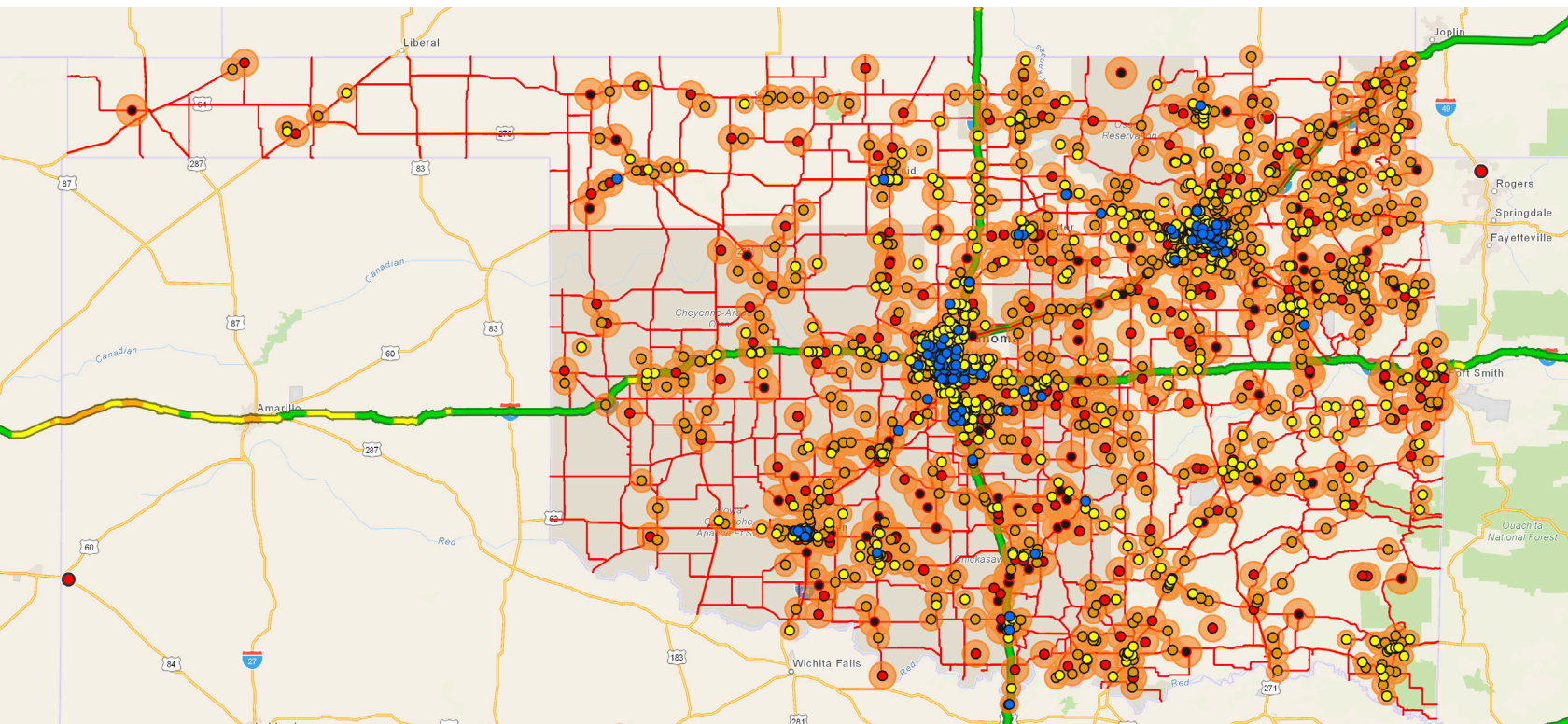
Case Study

Oklahoma State Police Save 889 Miles and 14 Hours of Travel Time

"It used to be we had to rely on that person who needed help to give out his physical location. Now, all he has to do is say, 'I need help,' and everybody can see where he's at."

—Ronnie Hampton, Captain, Oklahoma Highway Patrol

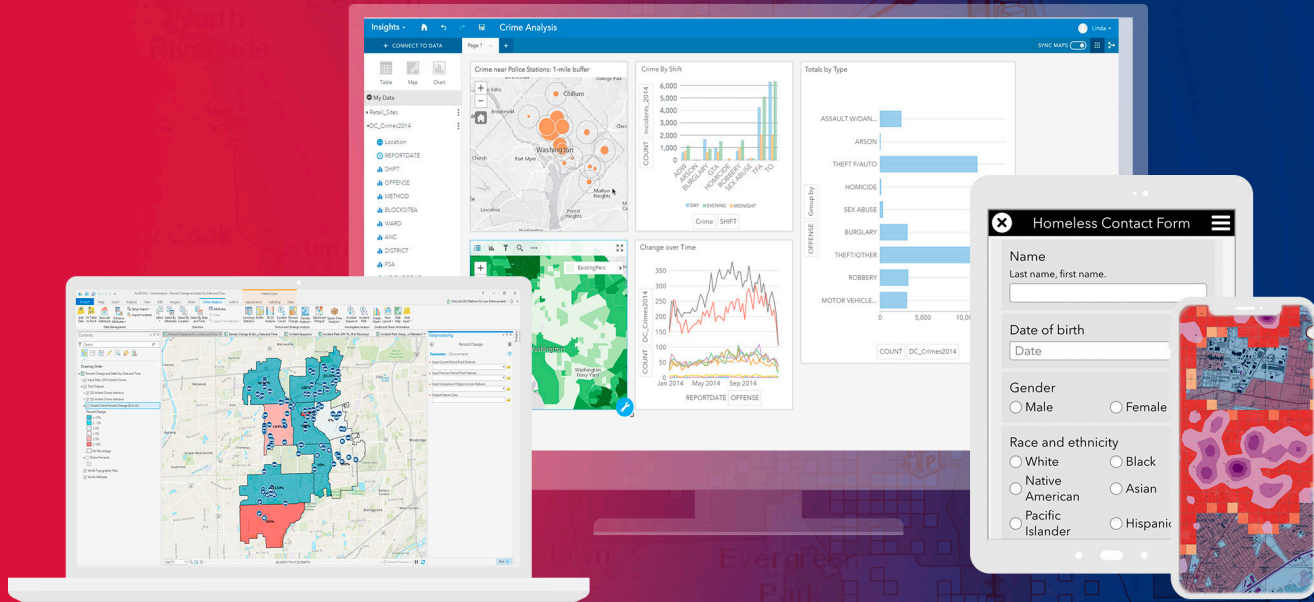
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ArcGIS Solutions for Law Enforcement

Esri has worked with the law enforcement community to build free solutions that configure ArcGIS to support common law enforcement workflows. Easy to download and deploy, our law enforcement solutions will help you import data, analyze crime, identify patterns, support special events, create tactical plans, engage the public, reduce traffic fatalities, help the homeless, and tackle the opioid epidemic.





Crime Fighting

Implementing Modern Crime Control Strategies

Modern police agencies need to perform crime analysis so that they can make smarter, data-driven decisions; reduce crime; and improve operations. Crime analysts leverage modern mapping and spatial analysis tools to deliver the information that officers and command staff need to make informed decisions. Every decision should start with analysis, and the ArcGIS platform has become easier than ever to use so you will spend less time preparing data and more time enabling decision-making.

To develop and implement a modern crime reduction strategy, police agencies face challenges in analysis, strategy design and execution, accountability to the public, and success indicators. The ArcGIS platform provides a complete set of analysis, visualization, field mobility, and operational awareness tools to overcome these types of challenges. ArcGIS enables hot-spot policing, and any successful data-driven crime reduction strategy is empowered with Esri's robust suite of analytical tools and apps. These translate analysis into operationally useful information products, including tools for officers in the field, and apps for accountability and awareness.

Understand Crime Patterns—This add-in for ArcGIS Pro supports many of the most common workflows performed by crime analysts. These tools are easy to use and organized into a single ribbon interface and separate buckets, supporting data management and selection; tactical, strategic, and investigative analysis; and capabilities for easy sharing and collaboration via web maps and apps.

Predict Future Incidents—A keystone of predictive policing is repeat and near-repeat victimization theory. Repeat victimization occurs when a person or property is victimized more than once within a short period of time. Similarly, near-repeat victimization occurs when perpetrators strike at a nearby location shortly after their initial crime. Research has shown that analysis of repeat and near-repeat crime data can be used to predict crime patterns. ArcGIS supports this type of analysis with a set of tools that can help analysts identify these patterns and create prediction zones within a geographic area.

Analyze Cellular Data—ArcGIS supports investigations with a tool that helps users analyze cell tower data and cell phone call detail records. With Cell Phone Analysis, you will be able to map cell tower sites and visualize their antenna azimuth, sectors, and beam width. Cell tower data can then be associated with call detail records to determine which tower and sector a cell phone was carried through.

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Special Events Management

Preparing for the Unexpected

In today's world, law enforcement needs to be ready for the unexpected. Special events can be particularly challenging and complicated to secure. Beyond the routine security and logistics of managing these events, large gatherings are attractive targets for disruption by bad actors. Successful event management requires a comprehensive event plan, effective administration of personnel and resources, and coordination with multiple agencies and stakeholders. Above all, police need to be prepared to respond to anything.

Esri special event planning tools will help your agency create effective event plans that improve coordination and collaboration and provide a live common operating picture on the day of any event. With Web GIS, it is easy to create an event site map and collaborate with other stakeholders. Once you share the map, agency planners can add all their resources, and everyone is seeing the same plan. On the day of the event, the map becomes a live operational picture in the command center that can be pushed out to personnel in the field so that all are on the same sheet of music. As things change, the operational picture is updated, and changes are shared in real time with all personnel. Important information that needs to be shared with the citizens can then be pushed out via public-facing applications.

Create and Deliver Event Plans—Use this configuration of Web AppBuilder for ArcGIS to create easy-to-use event planning maps that will help you visualize the location.

Add any data that is specific to that event, including parade routes, road closures, officer deployment locations, first aid stations, command posts, and any other assets required to help staff understand and oversee the event.

Give Dynamic Operational Briefings—This configuration of ArcGIS Online and the Esri Story Map Journal application template can be deployed by event planners and used by command staff to brief all personnel prior to the event. The event map template can be combined with key briefing points to interactively share the day-of-event plan, including deployment locations, road closures, event schedule, and any other incident information.

Enable Real-Time Situational Awareness—Configure Operations Dashboard for ArcGIS to create a shared operational picture of your event. Combine the event planning map with a live view of all resources, personnel, data feeds such as weather and traffic reports, and all activities on the day of the event. Operations Dashboard gives operators and command staff access to the most relevant, up-to-date information and indicators for total situational awareness and preparedness in case the unexpected happens.

[Learn More](#)



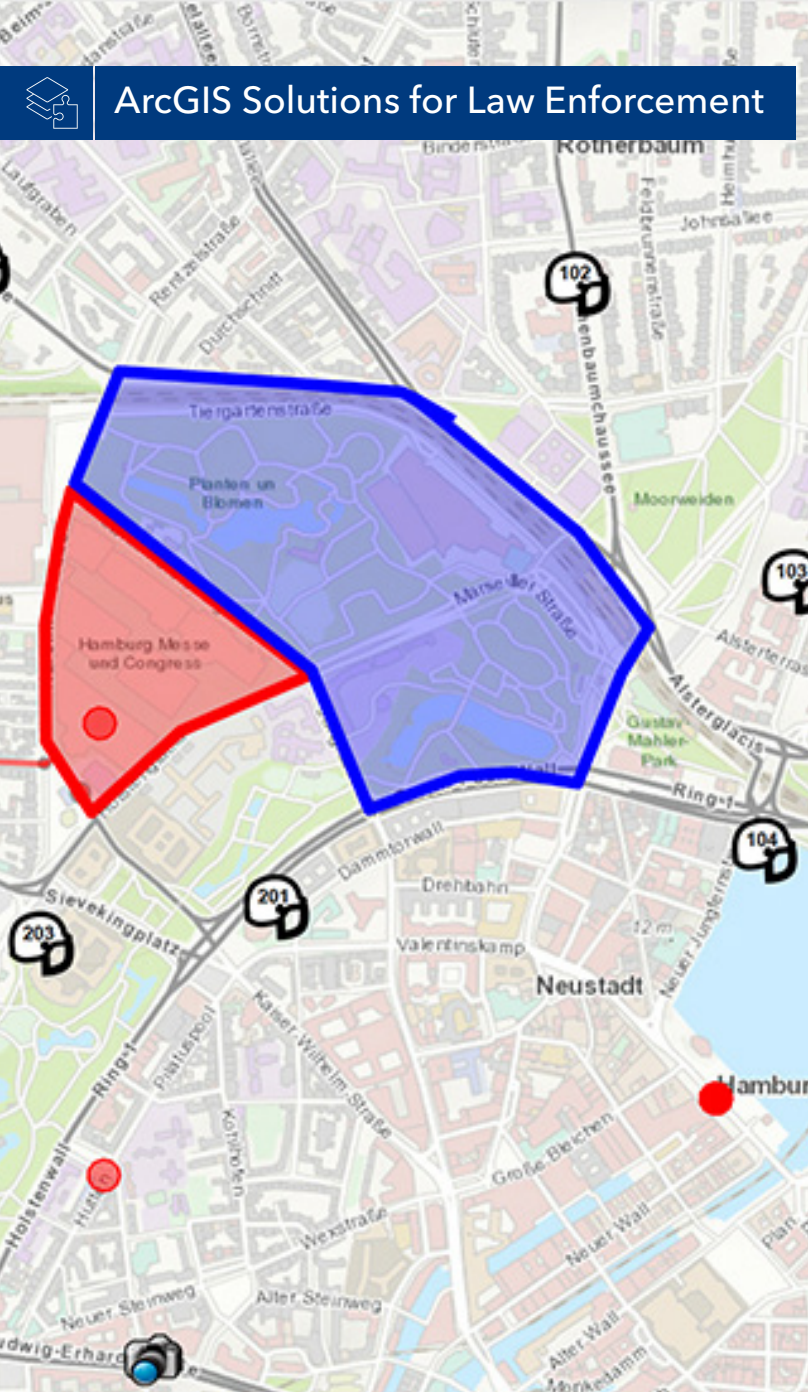
ArcGIS Solutions for Law Enforcement

Case Study

Hamburg Police Modernizes Operations with Real-Time GIS

The Hamburg Police Department is using the ArcGIS platform from Esri to integrate systems, enabling real-time operations and promoting officer awareness in the field.

[Learn More](#)





Community Building

Open and Transparent Policing

Over the last few years, there have been many high-profile incidents around the country that have caused a rift between police and the communities they serve. The police of today are working hard with their communities to restore trust and become more accountable and transparent. In support of this mission, many agencies are turning to data and technology.

Esri technology supports these community policing initiatives in powerful ways, as police can now provide information to citizens via an array of maps and apps that leverage the agency's existing GIS investment. ArcGIS can support a data strategy to increase transparency and promote community policing with apps that enable open data, open analysis, and citizen outreach.

Share Open Data—An ArcGIS Open Data portal provides a quick and easy way agencies can start sharing data with the public. Once you decide which datasets you want to share, you can enable them to update automatically on your public-facing website with our easy-to-use tools. ArcGIS gives you a single system to connect to your data and delivers maps and tools that anyone can use. Best of all, ArcGIS Open Data is included with your existing ArcGIS Online subscription!

Enable Self-Service Analysis—Often, people want answers, not just raw data. With public-facing dashboards, you can deliver open analysis tools that integrate maps with charts and widgets that encourage slicing, dicing, filtering, and querying of data. Build focused dashboards that put the spotlight on important issues such as crime trends, police interactions with the public, or locations where crime is prolific.

Engage the Community—With Esri Story Maps, you can engage with the public in a multimedia format that combines maps, narratives, images, and videos to tell a compelling story about the good work that your agency is doing. Use story maps to add textual context to data, communicate outreach efforts, enlist the public's help, or brief members of the community on upcoming events or initiatives that may affect them.

[Learn More](#)



Homelessness Response

Data Can Make a Difference

As the homelessness crisis has continued to escalate, police have been on the front lines. When there is an issue related to homelessness, police are called, and the issues are many. Panhandling, trespassing, loitering, and illegal camping are all commonly associated with homelessness. Many chronically homeless people suffer from mental health and substance abuse issues and get caught up in an endless cycle: getting arrested and incarcerated, being released, and offending once again. The burden to our justice system and communities is great, and police have been looking for alternative approaches to eliminating homelessness.

Esri has been working closely with many of our police and community partners. With their help, we have identified innovative ways to use maps and apps to do things like track contacts within the homeless population, inventory and connect them with resources and service providers, and share information with other community stakeholders. By using GIS to understand who the homeless people are and where they are located, police are better equipped to get them help.

Report Homeless Contacts—This configuration of Survey123 for ArcGIS can be used to report the location of homeless individuals and their encampments. Operations Dashboard for ArcGIS can then be configured to monitor officers or other personnel and assign them to follow up with and provide assistance to homeless individuals or share information with other community stakeholders.

Map Homeless Services—Use a configuration of Web AppBuilder for ArcGIS to inventory relevant services, such as drug treatment facilities, housing agencies, and other service providers in the community. Any service for homeless people that has a location can be added to the map and the inventory.

Locate Nearby Resources—Once resources have been inventoried, another Web AppBuilder configuration is used to help officers in the field quickly locate nearby agencies offering support such as food programs, emergency and long-term housing, health and human services providers, and rehabilitation facilities. Like other ArcGIS web apps, these apps work on any iOS, Android, or Windows smartphone or tablet.

Monitor Response—All your agency's activities in response to the homelessness crisis can be monitored in real time, using Operations Dashboard for ArcGIS. As officers make contact with homeless individuals, survey encampments, or take other action to help, activities can be supervised in real time with live maps, charts, and custom widgets that will give command staff a complete picture of the problem and the response efforts.

[Learn More](#)



Combating Addiction

With Location-Enabled Response

The opioid crisis is taking a terrible toll on our communities and showing little sign of stopping. One of the keys to getting ahead of this epidemic is to get illegally obtained drugs off the street. To do this, police need an informed response strategy, and an informed strategy is driven by data. Overdoses, crime locations, arrest reports, and other data can all be used to inform police and drive opioid abuse reduction strategies. And because all this data has location associated with it, it is essential to map and analyze it spatially.

The ArcGIS platform is indispensable in supporting opioid abuse reduction tactics. Use ArcGIS to store, manage, location enable, and analyze data. ArcGIS also provides contextual tools for sharing and exploring data as well as engaging community partners. Understand where drugs are coming from, how they are being distributed, and how addiction is driving crime in the community. Use a location-based approach to recognize hot spots, allocate resources, collect and share information in real time, and get ahead of the epidemic.

Report Suspicious Activity—With this configuration of Survey123 for ArcGIS, Crowdsourcing Manager, and Operations Dashboard for ArcGIS, your agency can enlist the public's help to monitor and report suspected drug activity in the community. If citizens see suspicious activity, they can easily report the location, and these crowdsourced reports will be updated in real time for police.

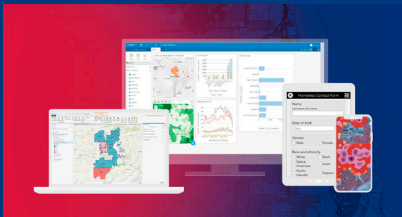
Track Overdose Locations—Using a configuration of Survey123 for ArcGIS, public safety stakeholders can inventory when and where naloxone has been deployed to treat overdoses. By understanding where naloxone has been administered, you can discover potential drug hot spots and drive response activities.

Monitor Incidents and Counter-Drug Operations—Monitor drug-related incidents and activity with this configuration of Operations Dashboard for ArcGIS. Command staff can monitor incident reports that are coming from computer-aided dispatch or records management data, and the dashboard will enable personnel to review daily law enforcement activities, understand developing trends, and monitor overall opioid-abuse reduction strategies.

[Learn More](#)

Next Steps

The ArcGIS platform can be deployed in phases, beginning with basic operating tools and building toward an integrated enterprise system. Often the best way to start is by addressing a specific problem or need and then building from there. Whether planning for large events, implementing a crime reduction strategy, or getting ahead of homelessness, Esri will help you see immediate benefits with a modern technology that meets modern police agency needs.



To implement some of the solutions you learned here, you can get started with just a few clicks. Scan or visit the link below to jump-start your agency

go.esri.com/lawenforcement