Esri has worked closely with law enforcement, public health and government leadership to define the use cases for location-based tools and analysis that address the Opioid Crisis. The result is an evolving collection of maps, information products, and analysis workflows, used by public health and safety agencies to communicate the severity of the opioid epidemic, promote treatment alternatives, and understand the effectiveness of response activities. These solutions are designed to work together as one integrated system that supports the community’s overall efforts to mitigate the growing opioid epidemic through education, response, treatment and prevention.

Richard Leadbeater, Esri

Shannon Valdizon, Esri

Council for State Government

Annual Conference December 2017
Addressing The Opioid Crisis

A Complex Issue with Many Impacts

- Individuals
- Society
- Communities
- Families
- And more…
Can Not Be Solved Alone

Health, Human Services, Law Enforcement, Academia, Not-For-Profits

Problems We’re Looking to Solve
- Death
- Overdose
- Crime
- Homelessness
- Breaks Families Apart
- Reoccurring Rehabilitation

How Technology Can Help
- Funding
- Education
- Allocation of Resources
- And more…
Iterative Policy Making

- Moving to a process of constantly collecting data and feeding information to decision makers
- Automated data collection through mobile tools
- Connection state business systems
- Real-time awareness
- More data-driven decision making
- Identify tactics that lead to positive impacts

EXERCISE STRONG CORPORATE CITIZENSHIP

ADDRESSING THE OPIOID CRISIS
The Catalyst

ADDRESSING THE OPIOID CRISIS
A Simple Start: Tell the Story

Health, Human Services, Law Enforcement, Academia, Not-For-Profits

- Make It Real
- Make It Personal
- Provide Context
- Make It Interactive

Celebrating Lost Loved Ones to the Opioid Epidemic

The rise in deaths due to prescription drugs and heroin has led to a perception that this is a problem for others, not something that might happen to its citizens. There are many people, especially those who interact with people daily, are aware of how prevalent this epidemic is and how it impacts all of society.

Explore Map

http://arcg.is/2j7YwN
Leverage the Broader Community
Understanding Repeatable Patterns

Transfer Lessons Learned From One Crisis to Another

- Earthquakes
- Flood
- Epidemics
- Hurricanes
- Tsunami
- Blight
- Hepatitis A Outbreak
- Homelessness Crisis
- Terrorist Attacks
- And more…

September 11 Terrorist Attacks

Hurricane Irma

Ebola Outbreak
Moving to Action
Data-Driven Policy

Data Provides Insights

Tactics Improve Results

Effective Communication Supports Action

Center for Disease Control
Opioid Addiction

State of Iowa
Prescription Drop Off

Northern Kentucky Health Department
Opioid Addiction Epidemic
Building A Strategy to Solving For Crisis

Transferring Knowledge to Real Solutions

- Assemble Data to Assess Threats
- Supplement information Quickly
- Establish Briefing and Communication Mediums
- Deploy Tactical Solutions
  - Allocate Resources
  - Prioritize Activities
  - Improve Coordination
  - Keep Public Informed
  - Maintain An Operations Dashboard
  - Monitor Progress
ArcGIS | A Complete GIS Platform

A System for Managing and Applying Geographic Information

Services Based
Deployable On-Premises and in the Cloud

Open

Distributed

Available as SaaS

Supporting Individuals, Teams, and Organizations
The Problem: Effective Execution of Comprehensive Opioid Strategies

• **Communication and Collaboration Are Critical**
  - Citizens, At-Risk Populations
  - Providers
  - Policy-Makers and Funders
  - Coordinating Internal Resources and Across Departments

• **Supporting Data-Driven Decision-Making**
  - Leveraging data you already have
  - Key datasets not timely or high quality
  - The right analytical tools for the right user
  - Information Products for Decision-Making
  - Data Security

• **Costs are Rising**
  - Demonstrating ROI is a growing problem

…Questions of “Where” cut across every aspect of an opioid strategy…
ArcGIS for the Opioid Epidemic Solution
A Collection of Maps and Apps to help your community tackle the opioid epidemic

Improving Education
- Educate the Community about the problem with interactive Story Maps

Accessible Treatment
- Web mapping apps for promoting treatment Options

Successful Prevention
- Apps to collect and measure Drug Drop-Box activity
- Apps to Monitor and Coordinate the Strategy

Effective Response
- Monitor Opioid Response
- Track Naloxone Deployments
- Citizen Reporting of Drug Tips

Apps For:
- First Responders
- Executives
- Public Health Professionals
- Analysts
- Citizens
ArcGIS for the Opioid Epidemic Solution
Leverages and integrates authoritative datasets on the problem and the response

Educate the Community
- Opioid Awareness Maps Project for ArcGIS Pro
- Opioid Awareness Story Map

Monitor Opioid Response
- Opioid Response Dashboard
- Opioid Mortality Reporter
- Opioid Overdose Reporter

Promote Treatment Options
- Locate Treatment Providers
- Find Pain Management Options
- Inventory Health Resources

Measure Drop-Off Effectiveness
- Find Drop-off Locations
- Track Drop-off Collections
- Inventory Health Resources

Track Naloxone Deployments
- Naloxone Deployment Reporter

Report Drug Activity
- Drug Activity Reporter
- Drug Activity Manager
- Drug Activity Dashboard

...to deliver a collection of focused maps and apps to tackle the opioid epidemic
Apps Enabling Field Collection
ArcGIS for the Opioid Epidemic

- Works Offline
- Any Device
- Configure with Excel
- Collect Photos

Survey123 for ArcGIS
Smarter Forms, Smarter Field Work
Apps Enabling Field Collection
ArcGIS for the Opioid Epidemic

Collect Overdose, Mortality and Naloxone Deployments
Analysis View of Field Collections
ArcGIS for the Opioid Epidemic

Review Statistics in Real-time
Analysis View of Field Collections
ArcGIS for the Opioid Epidemic

Review and Export Spatial Data
Apps Enabling Public Awareness of the Problem
ArcGIS for the Opioid Epidemic

Aggregate, Anonymize and Publish Data
Apps Enabling Public Awareness of the Problem

ArcGIS for the Opioid Epidemic

Share your community’s story:

**Opioid Awareness**

**Opioid Mortality**

Opioid mortality has grown across the entire nation and impacted our community directly. It is important for us to understand the impact of opioid mortality so we can devise appropriate prevention and response activities.

The maps on the right highlight opioid deaths by age group in 2016. They are used to understand where concentrations of specific age groups (e.g., over and under the age of 25) in our community are being impacted by the epidemic.

Note: These maps contain sample data that has been created in random locations and is for demonstration purposes only. It should not be interpreted as fact.

**Opioid Overdoses**

Opioid overdoses occur more frequently, but not all overdoses result in death. It is important for us to understand where overdoses are occurring so we can ensure first responders are prepared when responding to an incident. The location of overdoses also help us promote available treatment facilities and drug drop-off locations designed to rid our community of used prescription drugs.

The maps on the right highlight opioid overdoses by gender in 2016. They are used to understand where concentrations of specific genders (e.g., male and female) in our community are being impacted by the epidemic.

Our state has enacted a “Good Samaritan” law that provides immunity or other legal protections to people who call for help when they see an overdose occurring. If you see an overdose occurring in our community, please call 911 immediately.

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City of Haywood County of Hickory, NC

City of Leesville County of Madison, SC

City of Lenoir County of Mount Olive, NC

City of Gastonia County of Gaston, NC

City of Hickory County of Cataula, NC

City of Asheville County of Buncombe, NC

City of Spartanburg County of Spartanburg, SC

City of Mount Olive County of Lenoir, NC

City of Haywood County of Haywood, NC

City of Hickory County of Cataula, NC

City of Asheville County of Buncombe, NC

City of Spartanburg County of Spartanburg, SC
Apps Enabling Public Awareness of the Problem
ArcGIS for the Opioid Epidemic

Share your community’s story:

**Opioid Awareness**

**Impacting our Community**

This epidemic knows no natural, political, or social boundaries and affects nearly every community. Often times, society may have misconceptions of those impacted. Everyday members of our community have lost loved ones to opioid abuse and want to celebrate their life.

If you have lost a loved one, share their story and help our community break many of the stigmas associated with opioid abuse.

Follow the Celebrating Lost Loved Ones to the Opioid Epidemic app author @xheroinmaps on twitter and @opioidepidemicmaps on Facebook.

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**Opioid Overdoses**
Apps Enabling Public Awareness of the Problem
ArcGIS for the Opioid Epidemic

Share your community’s story:

Responding to Opioid Overdoses

Naloxone is the name of a generic drug that temporarily reverses the effects of an opioid overdose. First responders in our community have been trained to use naloxone when they encounter an overdose while responding to an emergency incident. Understanding where naloxone was used, and how many doses were used, helps guide response activities and inform health care providers offering treatment services.

The map on the right highlights naloxone deployments in our community over the last two years. Swipes to the right and left to see how many naloxone deployments were administered across our community in the last 90 days and the previous 90 days.

Report Suspected Drug Activity

First responders can not rid the community of prescription and illicit opioid drugs alone. Together, law enforcement officers want to work hand-in-hand with members of our community to fight opioid abuse. If you see suspected prescription or illegal drug activity occurring in our community - report it!

Use our Drug Activity Reporter to report suspected drug activity you observe. Once you report the incident, we will investigate and take
Apps Enabling Public Awareness of the Problem
ArcGIS for the Opioid Epidemic

Share your community’s story:

**Opioid Awareness**

Please note, the Substance Abuse and Mental Health Services Administration provides an inventory of substance abuse and mental illness facilities across the Country. We have incorporated these facilities in our locator application and supplemented them with additional local facilities inventoried by our public health department.

**Dispose of Unused Prescription Drugs**

Our community is committed to reducing the availability of unused or expired prescription opiates in the home and throughout the community. In many cases, these unused prescription drugs make their way into the drug supply chain and contribute to the epidemic.

Use our Drug Drop-off Locator to find locations where unused prescription drugs can safely be disposed. Enter an address in the search box or drop a point on the map to find a drug drop-off facility near you.

Twice a year, the U.S. Drug Enforcement Administration sponsors National Take Back Day. In April 2016, more than 447 tons were collected. Our community contributed nearly 175 pounds.

**Promoting Pain Management Alternatives**

Opioids are not the only answer for people who are suffering from acute or chronic pain. There are many alternatives to opiate based medication for pain management available. Choosing an alternative to opioids for pain could be prevent addiction, particularly for teens or young children who are at a higher risk.

Use our Pain Management Locator to find alternative pain management...
Apps Enabling Public Awareness of the Problem
ArcGIS for the Opioid Epidemic

Opioid Awareness
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Use our Pain Management Locator to find alternative pain management facilities in our community. Enter an address in the search box or drop a point on the map to find a facility near you.

Learn More
With increasing evidence highlighting the risks of overuse and abuse of opioids, we are committed to raising awareness, promoting treatment alternatives, and providing effective response throughout the community.

To learn more, visit our local public health department. In addition, here are a list of resources that can help you gain awareness.

U.S. Health and Human Services
Center for Disease Control and Prevention

Share your community’s story:
Apps to Promote Treatment and Pain Management Options
ArcGIS for the Opioid Epidemic

Catalog resources in your community...
Apps to Promote Treatment and Pain Management Options

ArcGIS for the Opioid Epidemic

...and help citizens find them
Apps to Measure Drug Drop-Box Effectiveness
ArcGIS for the Opioid Epidemic

Help Citizens locate nearby drug drop-off boxes
Apps to Measure Drug Drop-Box Effectiveness
ArcGIS for the Opioid Epidemic

Help officials report collection weights
Apps to Measure Drug Drop-Box Effectiveness
ArcGIS for the Opioid Epidemic

Help report collection weights
Apps to Track Naloxone Deployments

ArcGIS for the Opioid Epidemic

Understand where naloxone gets deployed in real-time
Apps to Track Naloxone Deployments
ArcGIS for the Opioid Epidemic

Calculate save rates
Apps to Track Naloxone Deployments
ArcGIS for the Opioid Epidemic

Identify Spatial Patterns to Optimize Availability
Apps Enable Citizen Reporting of Drug Tips

Enable Drug Tip Reporting for Citizens
Apps Enable Citizen Reporting of Drug Tips

ArcGIS for the Opioid Epidemic

Assign and Manage Officer Follow-Up Activities
Apps to Manage Your Strategy and Communicate to Stakeholders

ArcGIS for the Opioid Epidemic

Enable Executive Oversight into current trends and the progress of your strategy

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Enable Executive Oversight into current trends and the progress of your strategy.
Apps to Manage Your Strategy and Communicate to Stakeholders

ArcGIS for the Opioid Epidemic

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Enable Executive Oversight into current trends and the progress of your strategy.
Apps to Manage Your Strategy and Communicate to Stakeholders

ArcGIS for the Opioid Epidemic

Enable open data pages to facilitate transparency and data sharing with public stakeholders.
Enable open data pages to facilitate transparency and data sharing with public stakeholders.
First Responders and Support Staff
Enters Naloxone Administrations, Overdoses

Crime Analyst/Admin Staff
Analyzes Overdoses, Naloxone Admins, Drug Activity

Drug Drop-off Staff
Records and disposes

Public H&HS Staff
Shares Treatment Options

Medical Examiner/Coroner
Enters Toxicology & Deaths

Task Force
- Interprets recent KPI’s
- Informs Elected Officials and Stakeholders of mitigation strategies
- Advocates Grants and Resourcing

Elected Officials & Stakeholders
- Improves Education
- Promotes Treatment
- Ensures Effective Response
- Implements Prevention Strategies

Task Force
- Interprets recent KPI’s
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Public Stakeholders
Advocates Treatment based on Local Understanding
Partners with Public Safety to report Drug Activity
Open data reports to State

Police Mgmt
Understands Trends, assigns
Patrol and Investigative Resources

Health Official
Analyze and Mitigate Risk
Promote Treatment and Drop-off

Task Force
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Oakland County, Michigan
By configuring and leveraging the ArcGIS Platform the Tri-County Health Department was able to quickly communicate the extent of the problem in their community, share data and application, establish partnerships and provide practical ways for community members to become part of the solution. (ArcGIS Open Data Site, Drop Box Locator)
Northern Kentucky

“Most people didn’t know where to find in the area. Actually showing people what treatment is available and connecting them with that treatment is a huge step in the right direction.”

Debbie Young,
Public Health Informatic Manager
Getting Started
ArcGIS for the Opioid Epidemic
Tackle Opioid Epidemic

A collection of maps and apps used by public health and safety agencies to communicate the severity of the opioid epidemic, promote treatment alternatives, and understand the effectiveness of response activities.

Educate the Community
Opioid Awareness Maps can be used by public health and safety staff to produce overdose and death maps that communicate the severity of the opioid epidemic.

Learn more

Track Naloxone Deployments
Naloxone Deployment Reporter can be used by public safety staff to inventory where naloxone was used to treat an opioid overdose during an emergency incident.

View Application
Learn more

Get Started
Learn how to leverage your geographic information and the ArcGIS Platform to improve government activities and enhance services delivered to the general public.

LEARN MORE

Online Mapping Platform
Our ArcGIS Online model implementation will help you organize your geographic information and promote collaboration in your organization.

START ONE
READ MORE

Discussions on GeoNet
Overview

The ArcGIS Solutions Deployment Tool is an ArcGIS Pro Add-in that allows you to browse a catalog of ArcGIS Solutions and deploy them to an ArcGIS Online organization or Portal for ArcGIS. During deployment, the tool will create the items, groups, feature layers, maps, and applications that make up the ArcGIS Solution. Once deployed, the solution can be configured to meet specific needs in your organization by modifying the items created during deployment. If required, existing data can then be loaded into the new feature layers deployed to your ArcGIS organization.

Requirements

The ArcGIS Solutions Deployment Tool requires specific technical experience and software.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
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<tbody>
<tr>
<td>Software</td>
<td>Solution deployment, ArcGIS Pro 1.3 - 2.0 (Basic, Standard, or Advanced), Solution hosting, ArcGIS Online subscription, or</td>
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Deployment Options

Option 1: Implement with In-House Staff
- Use existing staff, ArcGIS software, and Solutions Deployment Tool to implement opioid solution offerings

Option 2: Professional Services
- Procure ArcGIS software and contract with Esri to implement opioid solution offerings.

Option 3: Extend Opioid Solution Offerings
- Contract with Professional Services or Esri Partner to evaluate existing workflows and extend opioid solution offerings to meet specific needs.
Why Esri?
ArcGIS for the Opioid Epidemic Offering

**Location Platform Technology**
- Leverages data you already have and makes it accessible across organization
- Enables quality, real-time data collection, visualization, and analysis
- Analytical tools for all skill levels
- Configure apps to deliver actionable intelligence for decision-making
- Supports data security needs with multiple deployment patterns

**Configurable Apps**
- Deliver geographic content in the form appropriate for each type of constituent- tell your most effective story with maps
- As strategy evolves, technology goes with you:
  - Re-configure your apps as needs evolve
  - Configure new apps as new projects emerge
  - No need to go back out to RFP to build another data silo

**Demonstrate Success of Strategy**
- Real-Time access to mission critical KPIs
  - Are outcome measures decreasing (overdoses, mortalities)
  - Are outputs successful (naloxone deployments resulting in saves?)