



Addressing Health Equity: Three GIS Essentials

Presentation to: NACo Healthy Counties

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@PolicyMapper

Jan. 19, 2022 , 1:00 pm – 2:00 pm

The background features an abstract composition of map-like elements, including a network of yellow lines resembling a road or utility map, and a cluster of colored hexagons at the bottom. A solid teal horizontal bar spans the top of the slide, serving as a backdrop for the title.

Agenda

- Introductions
 - How does GIS work
 - Solving for Humans in Crisis,
 - Accessing Health Care and Services, and
 - Enabling Health Equity.
- Bringing meaningful context to Healthy Counties
- Questions

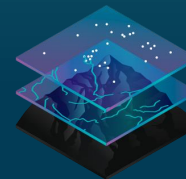
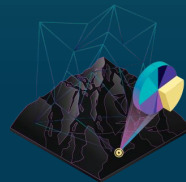
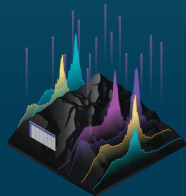
What is GIS?

A spatial system that creates, manages, analyzes, and maps all types of data

GIS analysis does more than just map data—it tells impactful stories.

A geographic information system (GIS) is a system that **creates, manages, analyzes** and **maps** all types of data.

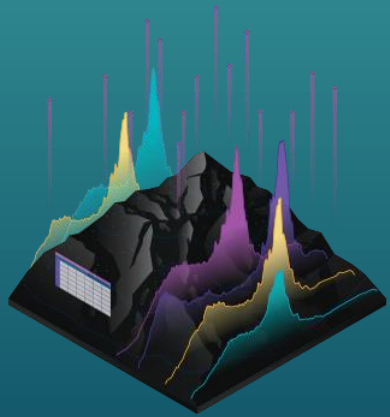
GIS connects data to geography, your geography—the county where you live. GIS helps users ***understand patterns, relationships*** and ***geographic context*** by blending health data (where things are) with descriptive information (what things are like there).



How Does GIS Work?

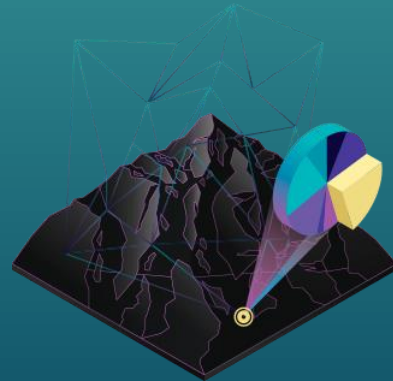
GIS technology applies geographic science with tools for understanding and collaboration.

To gain actionable intelligence from all types of data.



Data

GIS integrates many kinds of data through spatial location.



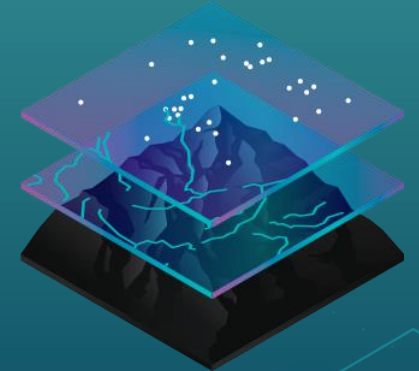
Spatial Analysis

Location provides new perspectives to your insight and decision-making.



Apps

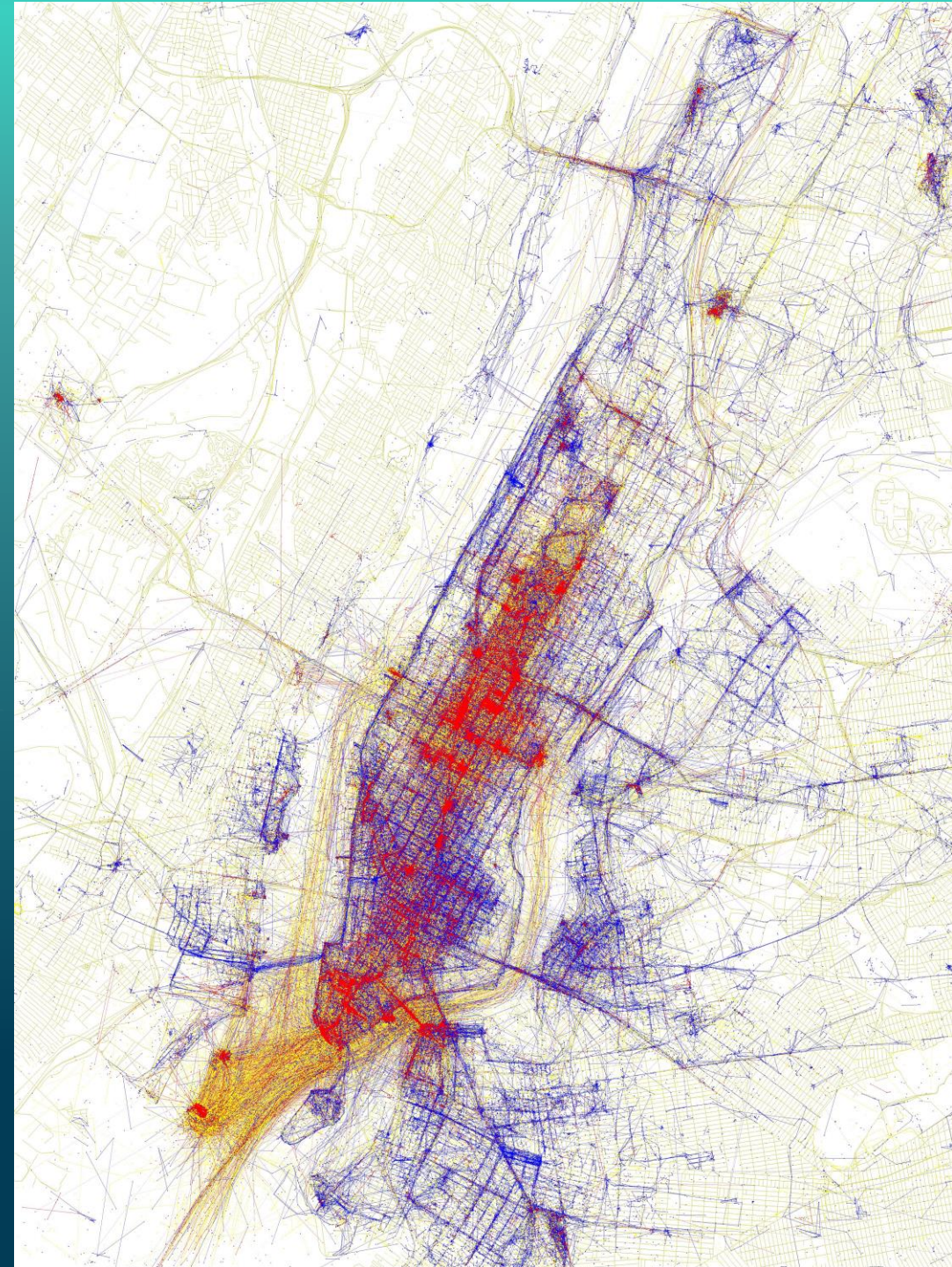
Apps provide focused user experiences.



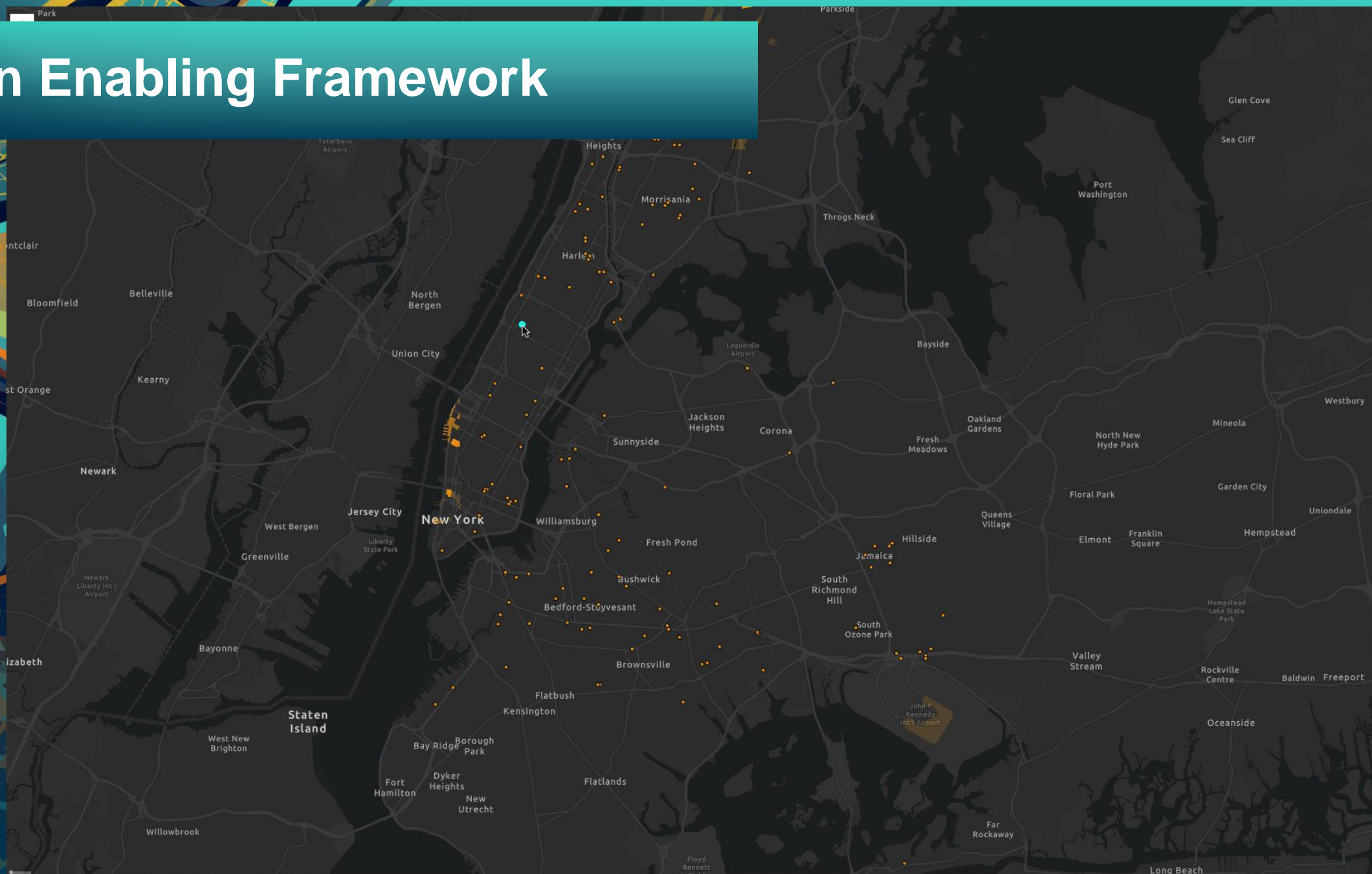
Maps

Maps are the geographic container.

GIS is An Enabling Framework



GIS is An Enabling Framework



It Starts With Identifying Priorities...

...aspirations.

Sustainable Community

Mobility
Resiliency
Smart Planning
Asset Management

A Prosperous Community

Economic Development
Affordable Housing
Destination Branding
Tourism

A Safe Community

Vision Zero
Low Crime Rate
Situational Awareness
Effective Disaster
Response

Healthy Community

Opioid Abuse
Access to Care
Homelessness &
Housing

A Well-Run Community

Real-Time Awareness
Data-Driven Decision
Making



An abstract graphic on the left side of the slide. It features a stylized map of the United States in the upper left, with a yellow and orange hurricane-like shape swirling around it. Below the map, there are various geometric shapes and colors, including a large orange and yellow arc, and a cluster of hexagons in shades of blue, orange, and grey at the bottom. The background is a solid teal color.

Solving for Humans in Crisis:

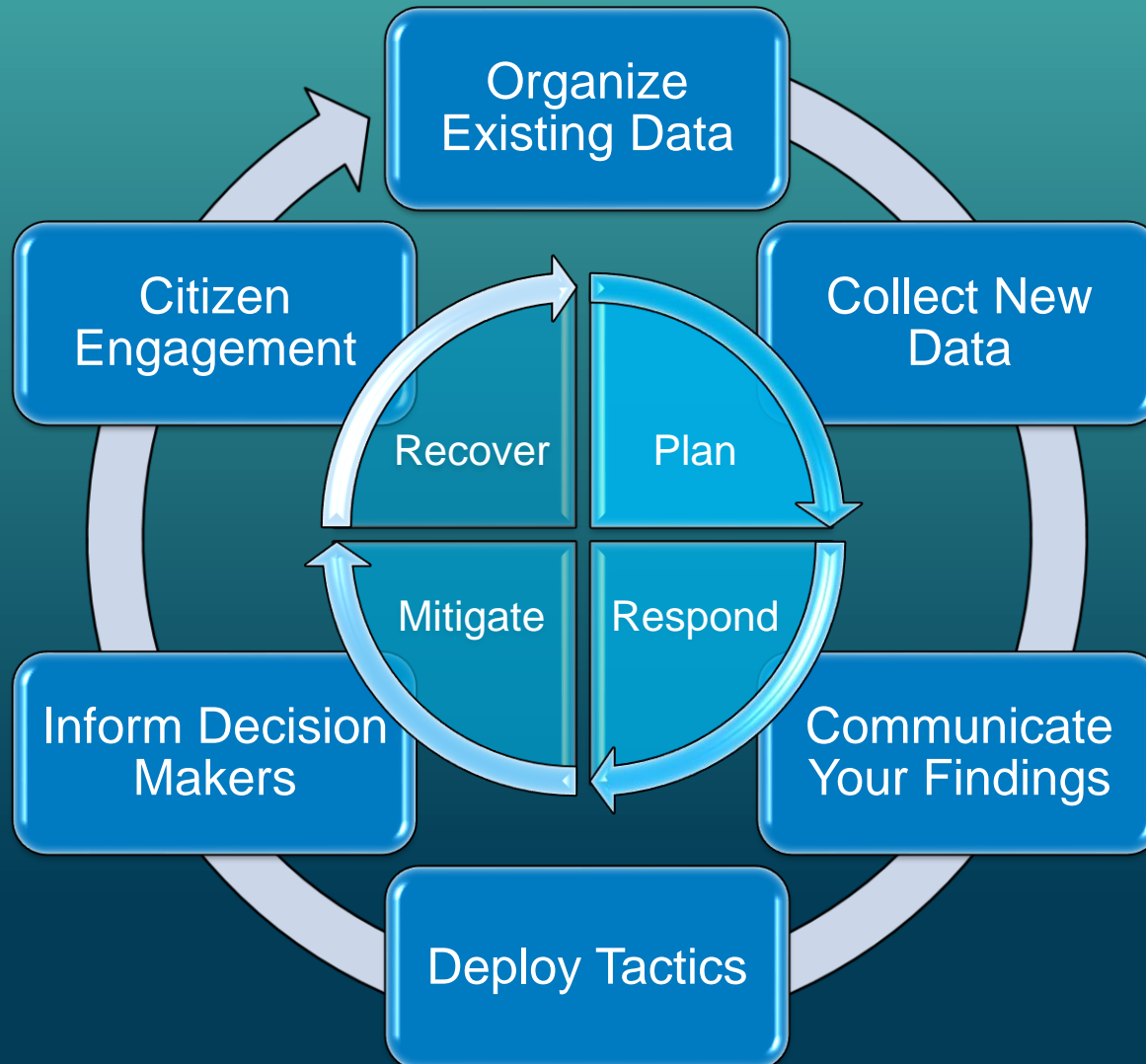
The role of GIS is obvious within community emergencies, like wildfires, hurricanes or flooding.

Borrowing transferable workflows and decision support tools, state and local governments are applying these best practices to battle social inequities such as blight, opioid addiction and homelessness.

Ultimately, GIS allows responders to make better decisions and policy-makers to be better at adjusting methods and tactics to keep a community moving forward.

[Respond to Homelessness in Crisis Mode \(esri.com\)](https://esri.com/en-us/about/esri-news/articles/respond-to-homelessness-in-crisis-mode)

Solving for Humans in Crisis



Contact Tracing Is Making Progress in Colorado

Data and Smart Maps Are Elevating Human Services in Snohomish County

Placer County PTC User Story

Tempe Tests Wastewater to Provide Early Warnings

Tulsa County COVID-19

Respond to Homelessness in Crisis Mode (esri.com)



Accessing Health Care and Services:

Geographic information serves as the common denominator for any public health preparedness solution because location data is essential to every phase of planning, response, and recovery.

GIS scales to events ranging from inclement weather conditions to pandemics. It helps governments scope out the extent of a public health crisis and predict the path forward

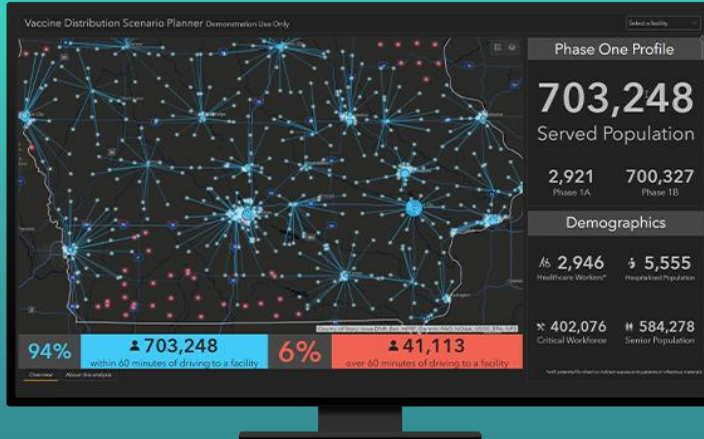
Maps and apps enable public health officials to coordinate efforts with other agencies and external stakeholders.

The public health preparedness community can make major inroads by embracing GIS data, models, communication and engagement hubs, and location-centric applications.

[govloop-public-health-prep-brochure-175948-web.pdf \(esri.com\)](#)

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[govloop-public-health-prep-brochure-175948-web.pdf \(esri.com\)](https://www.esri.com/arcgis/resources/govloop-public-health-prep-brochure-175948-web.pdf)

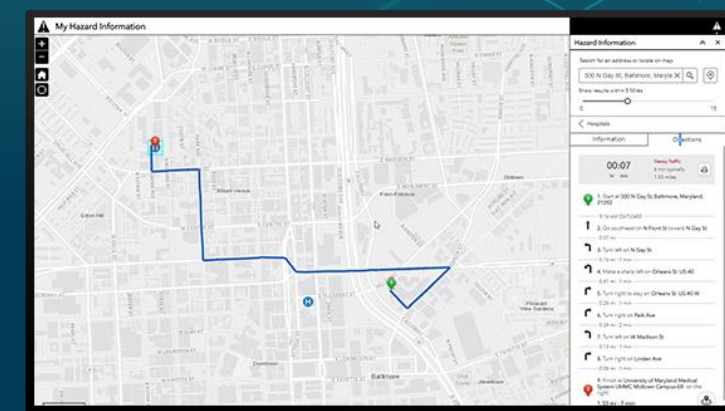
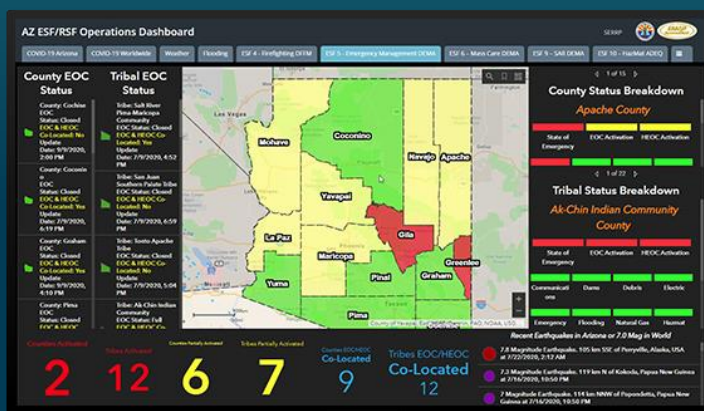
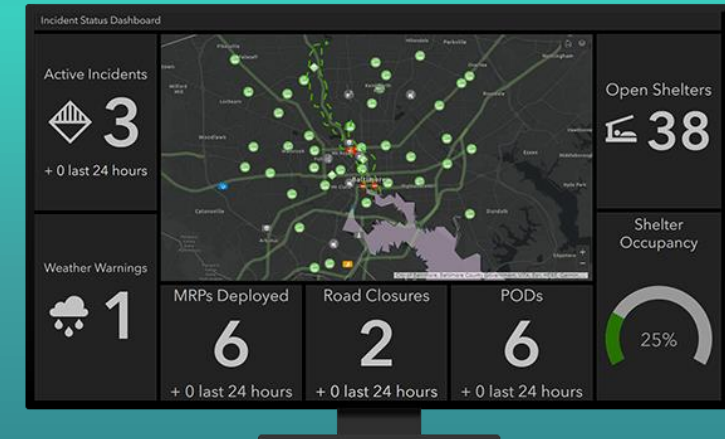


Resource Allocation

Decision Support

Communication & Collaboration

Civic Engagement



Public Health Preparedness Using a GIS Strategy



Accessing Health Care and Services:

Geographic information serves as the common denominator for any public health preparedness solution because location data is essential to every phase of planning, response, and recovery.

- [How GIS Can Help Leaders Achieve Equitable, Speedy Vaccine Distribution](#)
- [Responding to a Health Crisis May Never Be the Same, or Will It?](#)
- [COVID-19: Contact Tracing Is Making Progress in Colorado](#)



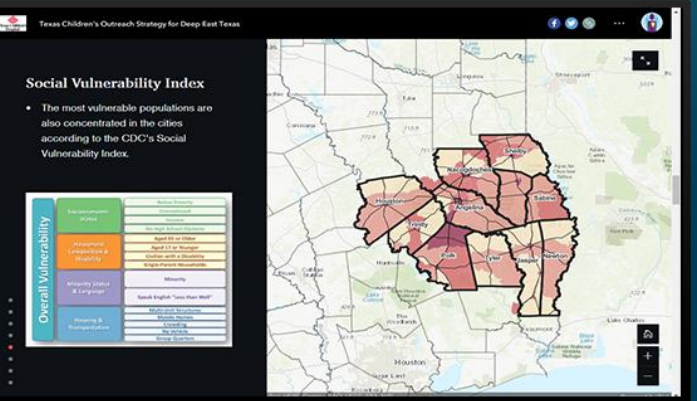
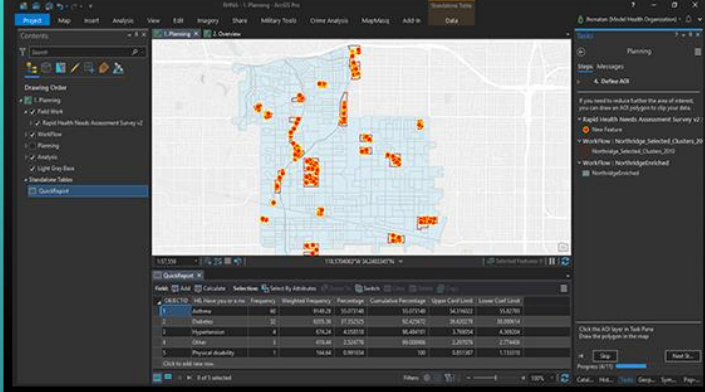
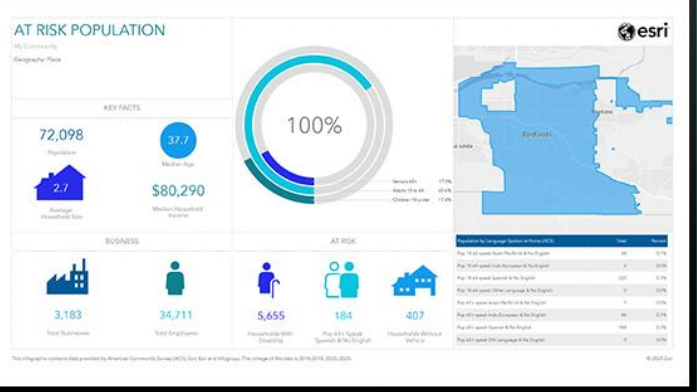
Enabling Health Equity:

Never has there been such a focus on equity as it relates to health—to ensure that health and human services organizations address the social determinants of health and gaps in social and racial equities.

These inequities involve poverty, age, living conditions, and education, and it's important to understand the connection between where things are happening and where service gaps exist.

A location-based strategy can help you create an effective approach to **collecting data**; **performing analysis**; **allocating resources** where they're needed most; **communicating** with decision-makers; and, ultimately, **achieving health equity**.

[Solutions for Health Equity with GIS \(esri.com\)](https://www.esri.com)



Solutions for Health Equity with GIS (esri.com)

Enabling Health Equity:

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ARCGIS SOLUTIONS GOVERNMENT SOLUTIONS (ESRI.COM)

ArcGIS Solutions is a collection of focused maps and apps that help address challenges in your organization. They leverage your authoritative data and are designed to improve operations, provide new insight, and enhance services in government, utility, defense, public safety, telecommunications, and commercial business.

The screenshot displays the ArcGIS Solutions website interface. At the top, the Esri logo is on the left, and navigation links for Products, Solutions, Support & Services, Stories, and About are in the center. On the right, there are search and sign-in options. Below the navigation bar, the 'ArcGIS Solutions' header is prominent, with a sub-header 'Industry-specific configurations for ArcGIS'. A search bar labeled 'Search Solutions' is located below the header. The main content area shows a grid of solution cards, with the 'Industry: Health and Human Services' filter selected. The cards are arranged in two rows and four columns. The first row includes 'Performance Management', 'Coronavirus Vaccine Distribution Dashboard', 'Coronavirus Vaccine Outreach', and 'Coronavirus Business Continuity'. The second row includes 'Homeless Outreach', 'Mosquito Service Requests', 'Homeless Point-in-Time Counts', and 'Coronavirus Site Safety'. Each card features a representative image, a title, and a brief description of the solution's purpose. The 'Coronavirus Vaccine Distribution Dashboard', 'Coronavirus Vaccine Outreach', 'Homeless Point-in-Time Counts', and 'Coronavirus Site Safety' cards are highlighted with a yellow border.

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ArcGIS Solutions Overview Resources View Gallery

ArcGIS Solutions
Industry-specific configurations for ArcGIS

Search Solutions Relevance Filter

Filters

Solutions: 22 Filters Industry: Health and Human Services X Clear filters

New Release ☐

Industries

- Business
- Conservation
- Defense
- ☒ Health and Human Services
- > Public Safety
- > State and Local Government
- > Telecommunications
- > Utilities

Performance Management

Performance Management can be used to monitor key performance metrics and communicate progress made on strategic outcomes to the general public and other interested stakeholders.

Coronavirus Vaccine Distribution Dashboard

Coronavirus Vaccine Distribution Dashboard can be used to tabulate, visualize and monitor key vaccine distribution metrics and trends that support a phased coronavirus disease 2019 (COVID-19) vaccination plan.

Coronavirus Vaccine Outreach

Coronavirus Vaccine Outreach can be used to communicate vaccination plans, increase public confidence in coronavirus disease 2019 (COVID-19) vaccinations and ensure the public knows when, and where, they can be vaccinated.

Coronavirus Business Continuity

Coronavirus Business Continuity can be used to maintain business operations and share authoritative information with customers and stakeholders during the coronavirus disease 2019 (COVID-19) pandemic.

Homeless Outreach

Homeless Outreach can be used to educate the public and help individuals experiencing homelessness find available resources.

Mosquito Service Requests

Mosquito Service Requests can be used to solicit reports of mosquito activity and locations of potential breeding sites from the general public.

Homeless Point-in-Time Counts

Homeless Point-in-Time Counts can be used to conduct point-in-time counts of sheltered and unsheltered homeless individuals.

Coronavirus Site Safety

Coronavirus Site Safety can be used to create coronavirus disease 2019 (COVID-19) health safety plans for their facilities, sites, and campuses and to monitor health safety plans as locations reopen.

Streamline Point-in-Time counts

The image shows three smartphone screens displaying the ArcGIS Survey123 form for 'Homeless Count'. The first screen shows the 'Survey name' and 'Is the person in a shelter?' question. The second screen shows 'What is the name of the shelter/program?' and 'What is the type of shelter/program?'. The third screen shows 'Are you able to survey this person?' and 'How many children +18 are there in your (their) household, who are sleeping in the same location tonight?'.

An ArcGIS Survey123 form used by health and human service agencies and their network of volunteers to conduct sheltered and unsheltered homeless surveys



Homeless Risk Reduction

Homeless Risk Reduction can be used to identify where regular reports of homeless activity might originate and address regular reports of homelessness activity in a community.



Vaccine Coverage Analysis

Vaccine Coverage Analysis can be used to identify underserved populations and optimize plans for disease vaccination sites.



Coronavirus Health Screening

Coronavirus Health Screening can be used to conduct coronavirus disease 2019 (COVID-19) health screenings before employees and visitors are permitted to enter a building, facility, or location.



Community Health Assessment

Community Health Assessment can be used to collect community health information, at the household-level, required for disaster response or health action plans.



Coronavirus Testing Sites

Coronavirus Testing Sites can be used to identify at-risk populations and develop coronavirus disease 2019 (COVID-19) testing site plans.



Social Equity Analysis

Social Equity Analysis can be used to understand community characteristics, analyze community conditions and actions, and generate an equity analysis index.



Hospitalization and PPE Inventory

Hospitalization and PPE Inventory can be used to inventory hospital bed capacity and available personal protective equipment (PPE) such as ventilators, face masks, medical gowns, and gloves.



Coronavirus Wellness Checks

Coronavirus Wellness Checks can be used to check on the wellness of vulnerable individuals with an organized set of volunteers from their community.



Opioid Epidemic Outreach

Opioid Epidemic Outreach can be used to inventory prevention and treatment resources, communicate the severity of the epidemic, and promote resources available to those in need.



Mosquito Surveillance

Mosquito Surveillance can be used to monitor mosquito populations and track the location of positive vector-borne disease test results.



Overview

Homeless Point-in-Time Counts can be used to conduct counts of sheltered and unsheltered homeless individuals.

It provides the ability to rapidly conduct homeless counts of homeless persons who are sheltered in transitional housing, an emergency shelter and safe havens. Using field apps and location-based information to conduct point-in-time counts helps meet the requirements of Department of Housing and Urban Development (HUD) in Continuum of Care (CoC) communities. Communities that meet these requirements can increase homeless service capability and funding.

Homeless Point-in-Time Counts—ArcGIS Solutions

INTRODUCTION TO SOCIAL EQUITY ANALYSIS

The Social Equity Analysis solution delivers a set of capabilities that help you understand community characteristics, analyze community conditions and actions, and generate an equity analysis index that can be used to educate internal and external stakeholders.



ArcGIS Solutions

Social Equity Analysis Solution Released

Local Government

November 18, 2021



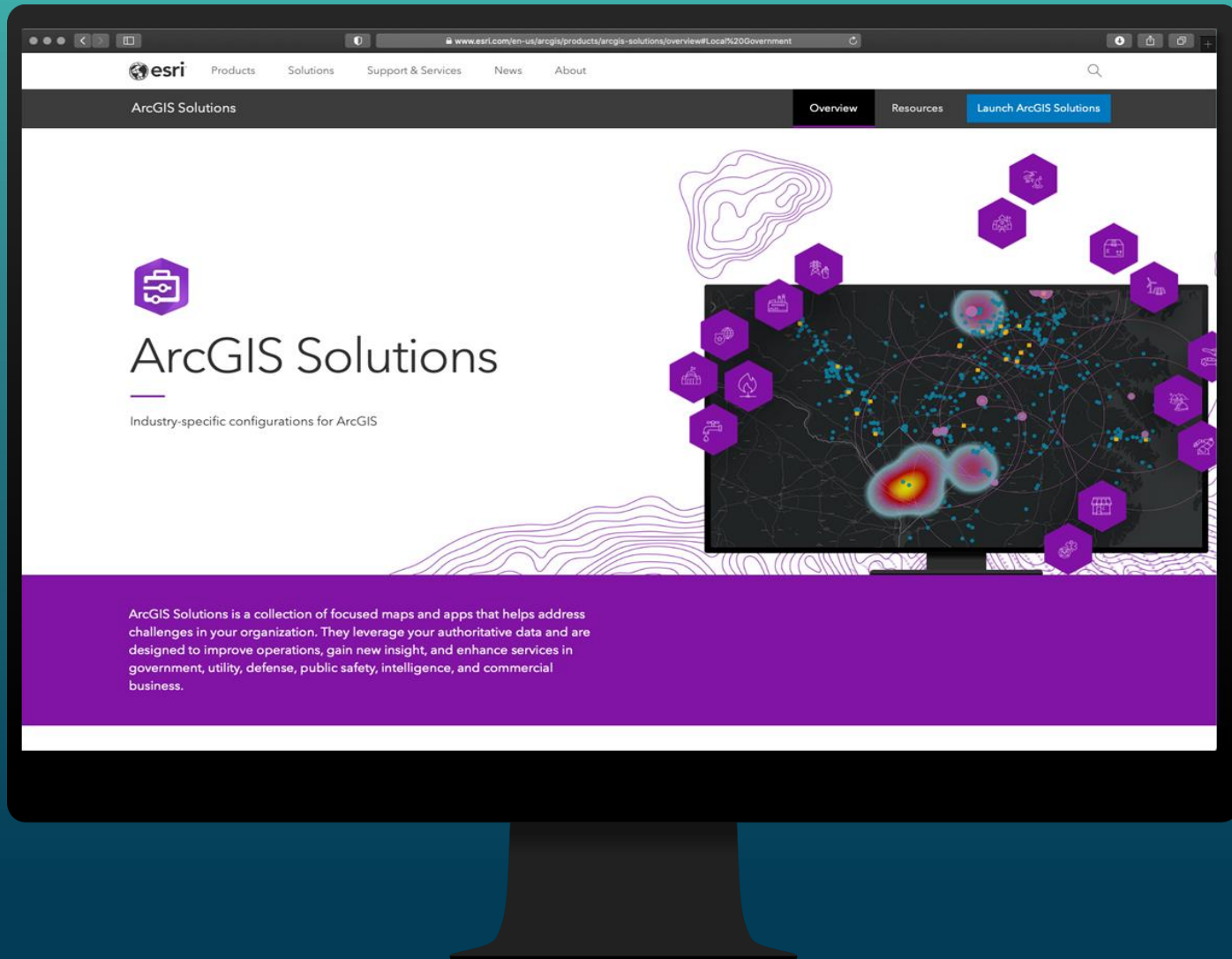
Michael Brown



Governments across the globe struggle to ensure residents have opportunities to continue their education, secure a well-paying job, find healthy foods, access affordable health care, and locate housing options in safe neighborhoods. They recognize many face challenges due in part to systematic and structural barriers, that constrain access to opportunity.

Social equity aims for the justness and fairness of social policy. Many governments are making a commitment to social equity, seeking to make investments aligned with the severity of needs in their jurisdiction. They want strong, equitable, communities that provide opportunities and benefits to all. To begin, they first must understand patterns, conditions and outcomes that impact various groups. Being able to aggregate, disaggregate and analyze community conditions is crucial to understanding where an abundance or lack of access to resources exists.

The [Social Equity Analysis](#) solution delivers a set of capabilities that help state and local governments understand community characteristics, analyze community conditions and actions, and generate an equity analysis index that can be used to educate internal external stakeholders.



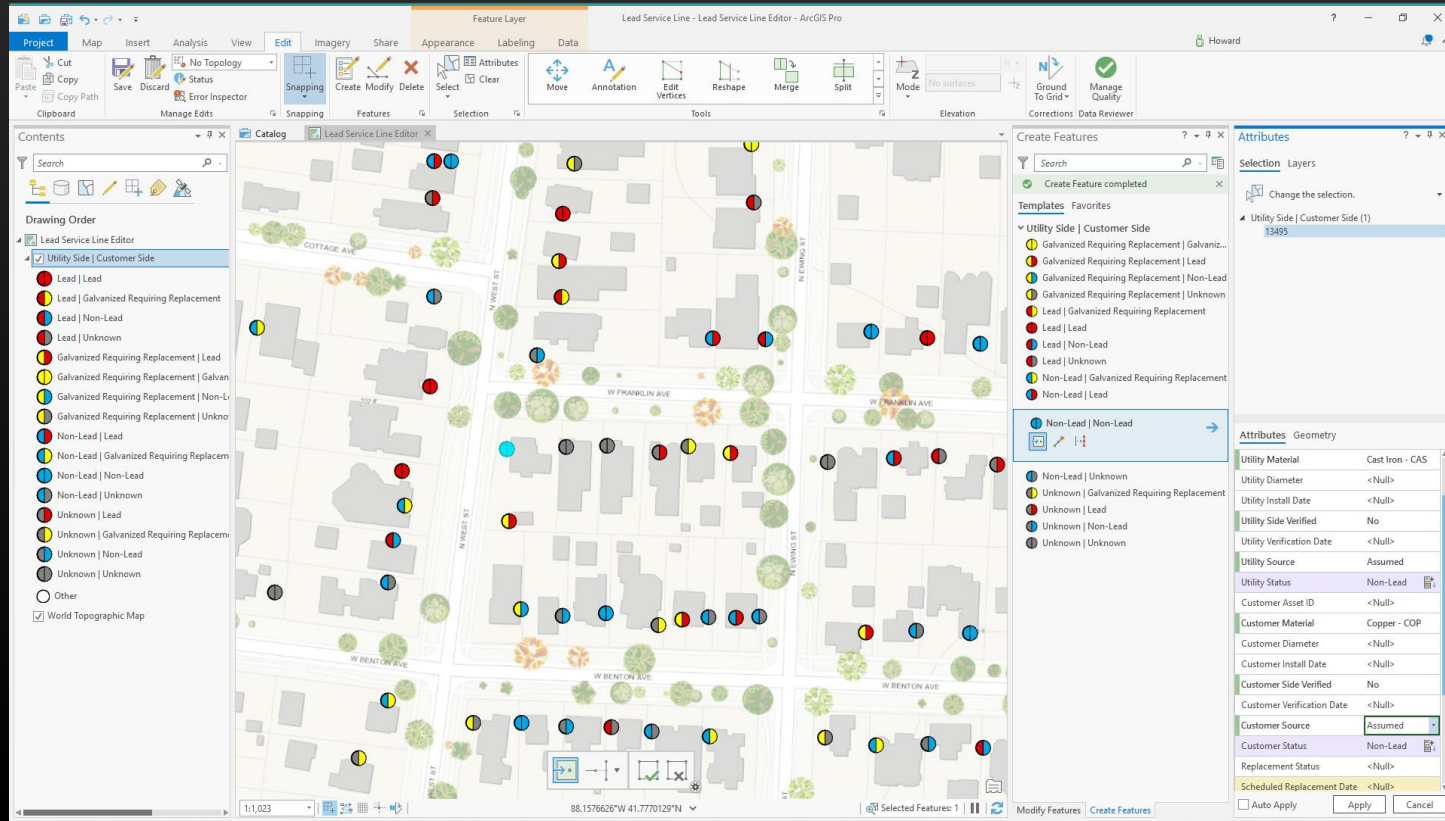
Demonstration



Lead Service Line Inventory

- Streamline service line inventories
- Optimize replacement programs
- Comply with regulations
- Inform the public

Streamline service line inventories



An ArcGIS Pro project used by mapping technicians to capture service line information.

Streamline service line inventories

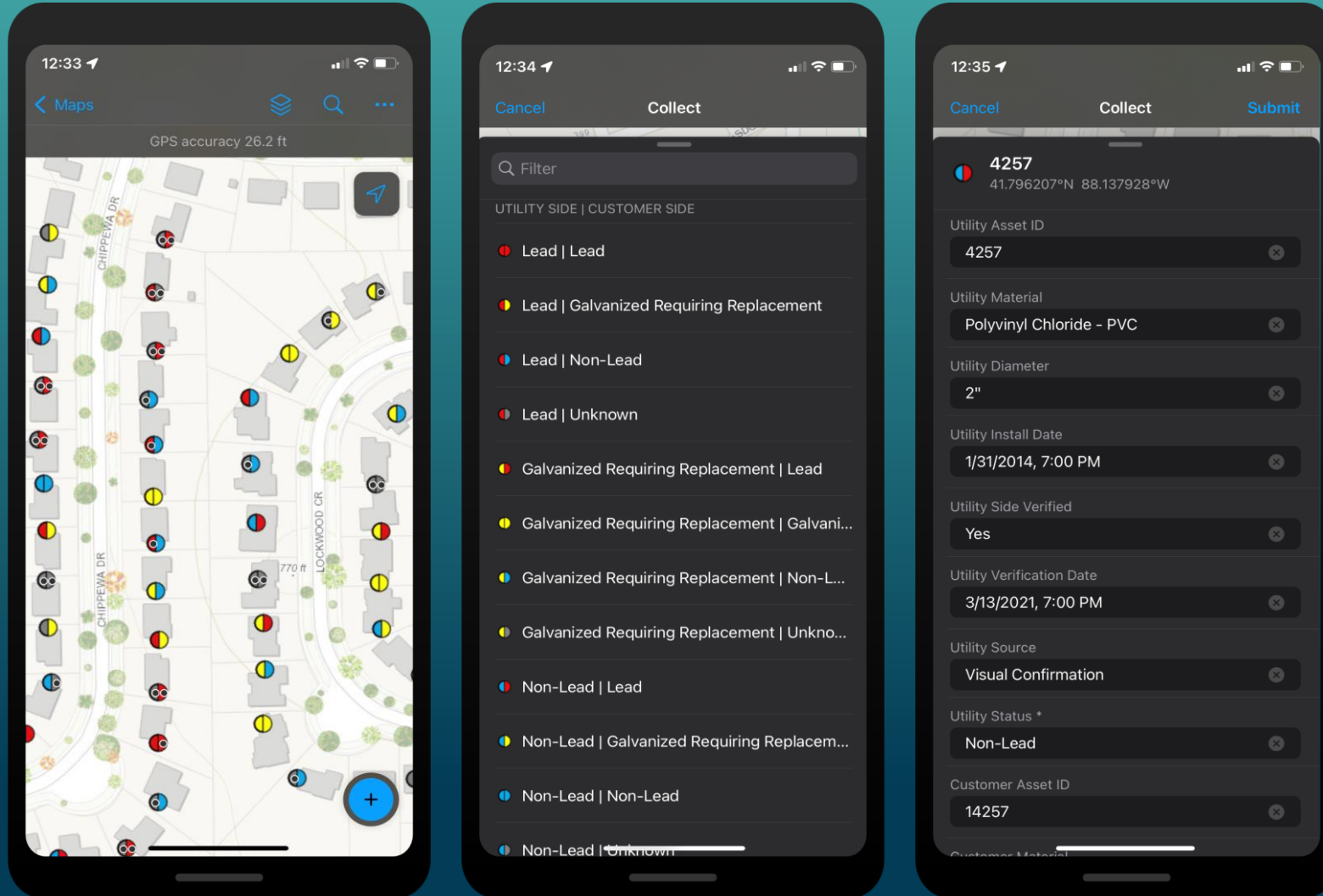
The screenshot displays the 'Lead Service Line Editor' web application. On the left, a form titled 'Utility Side | Customer Side' contains the following fields:

- Account ID: 6610
- Address: 221 N. Washington St.
- Utility Asset ID: 6610
- Utility Material: A dropdown menu with 'Unknown' selected. The list of options includes: Unknown, Asbestos Cement - AC, Cast Iron - CAS, Copper - COP, Ductile Iron - DIP (highlighted), Galvanized Pipe - GP, Polyethylene - PE, Polyvinyl Chloride - PVC, Lead - LP, Brass - BRS.
- Utility Verification Date: 6/28/2021
- Utility Source: 11:30:00 AM
- Utility Status: Assumed
- Utility Status: Non-Lead
- Customer Asset ID: 16610
- Customer Material: Copper - COP
- Customer Diameter: 1 1/4"
- Customer Install Date: 3/31/1964
- Customer Side Verified: 5:00:00 PM
- Customer Side Verified: Yes

At the bottom of the form are 'Close', 'Delete', and 'Save' buttons. The right side of the interface shows a map of a residential area with streets labeled 'W 6TH AVE', 'E 6TH AVE', and 'N WASHINGTON ST'. Several colored markers (red, blue, yellow, green) are placed on the map, likely representing service line locations. The map includes a search bar at the top with the text 'Find address or place' and a scale bar at the bottom.

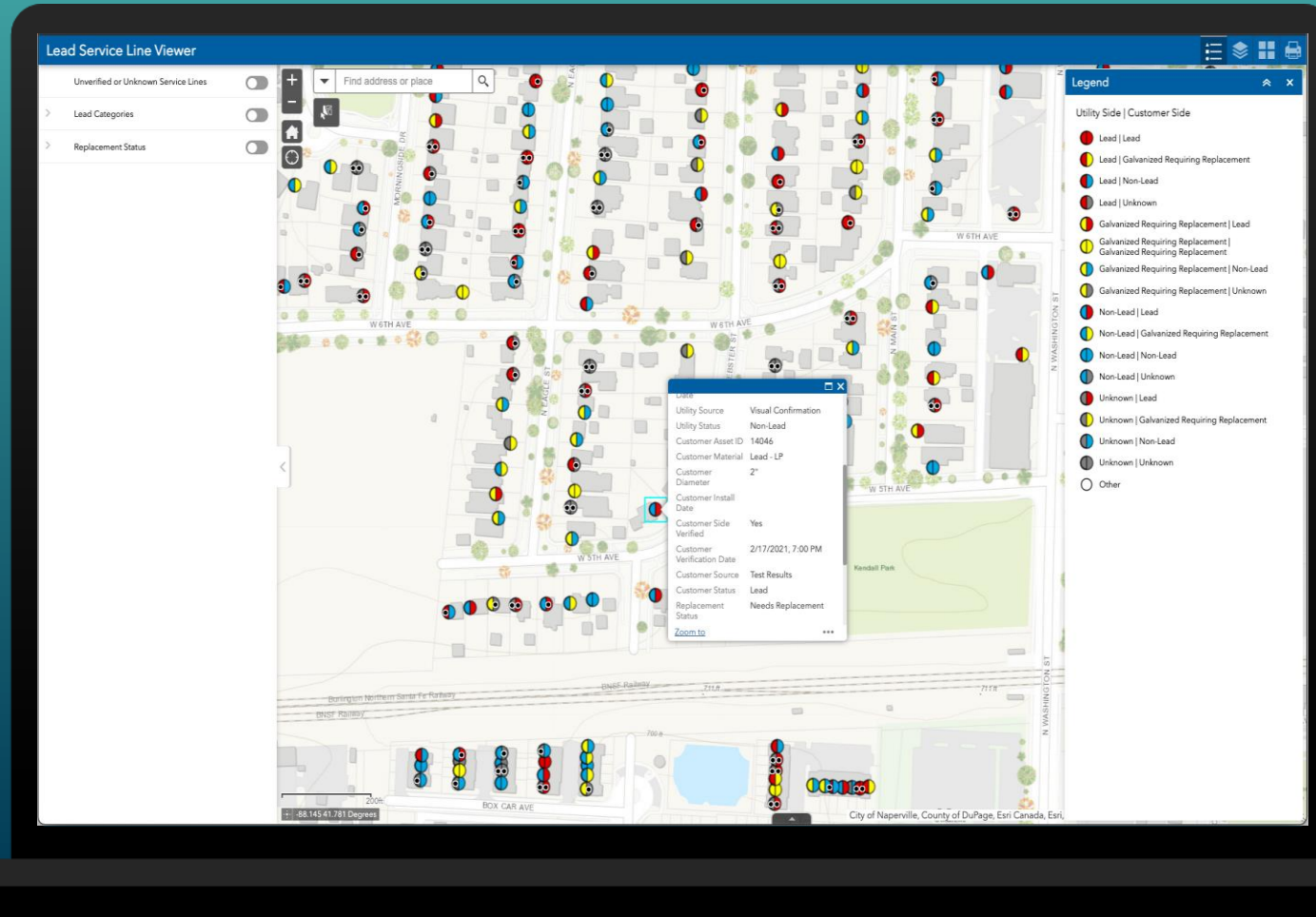
An ArcGIS Web AppBuilder app used by an editor to update lead service line data.

Streamline service line inventories



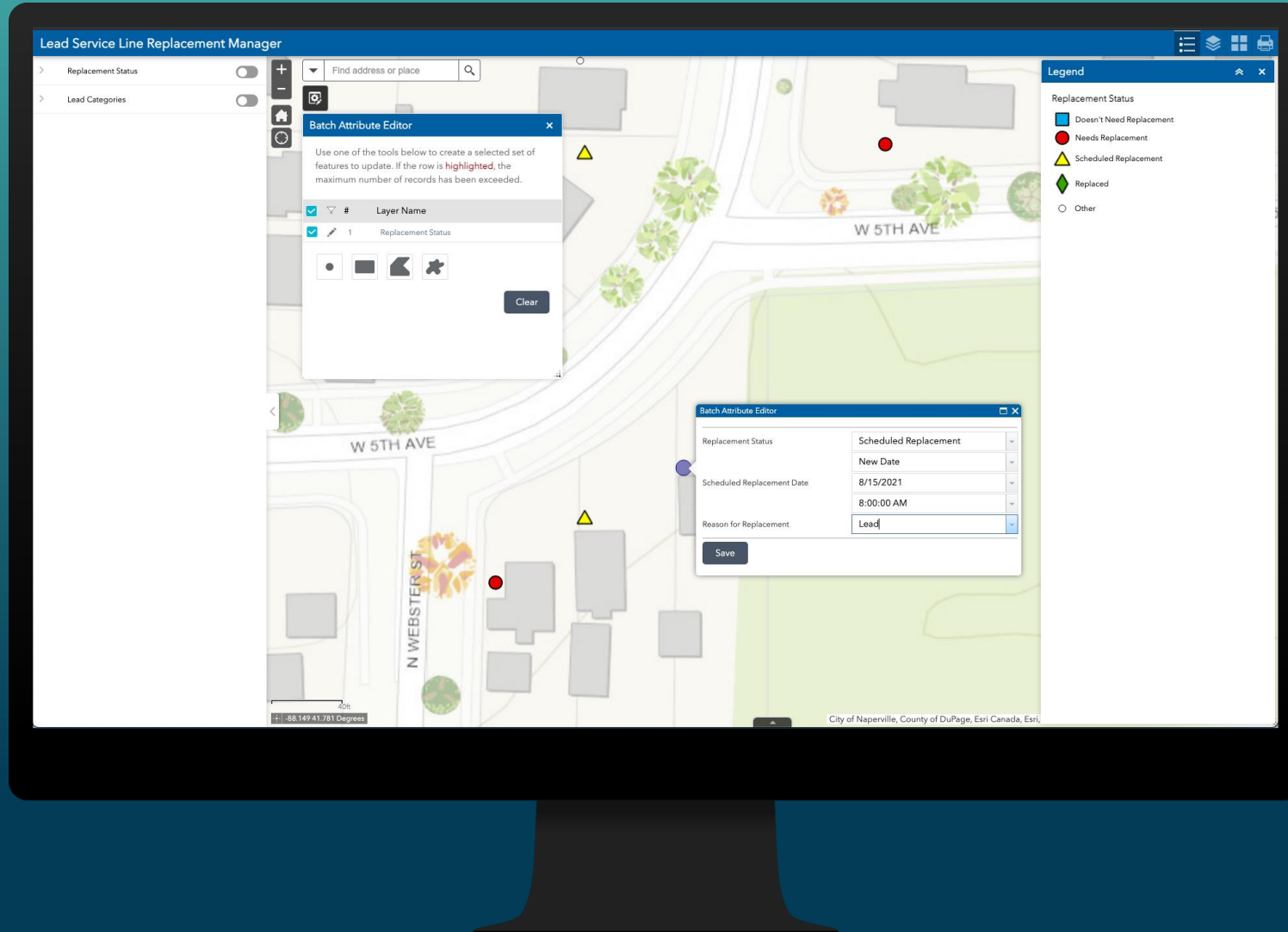
An ArcGIS Field Maps map used by a fieldworker to add lead service line data

Streamline service line inventories



An ArcGIS Web AppBuilder app used by office staff to view lead service line information.

Optimize replacement programs



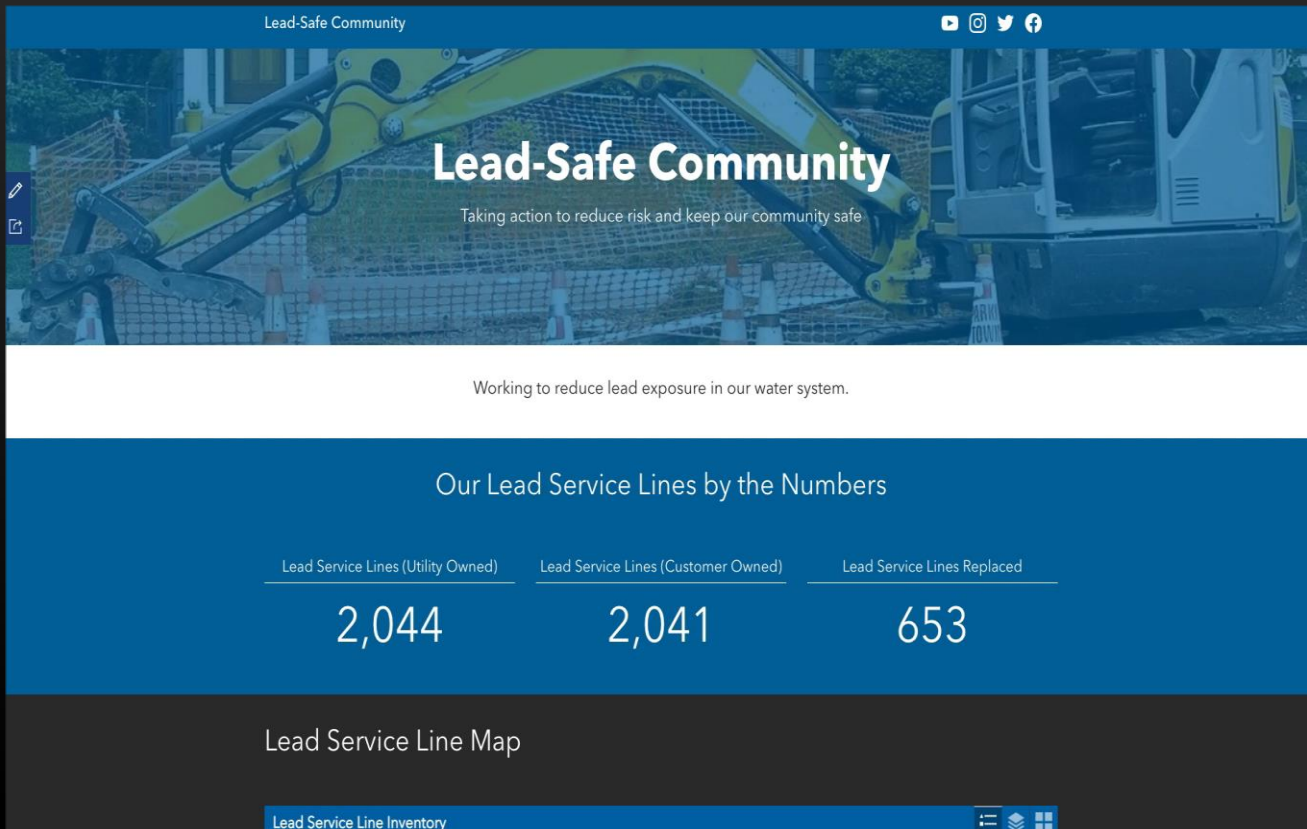
An ArcGIS Web AppBuilder app used by a manager to view the status of lead service mitigation activities.

Comply with regulations



An ArcGIS Dashboards app used by office staff to view lead service line status information.

Inform the public



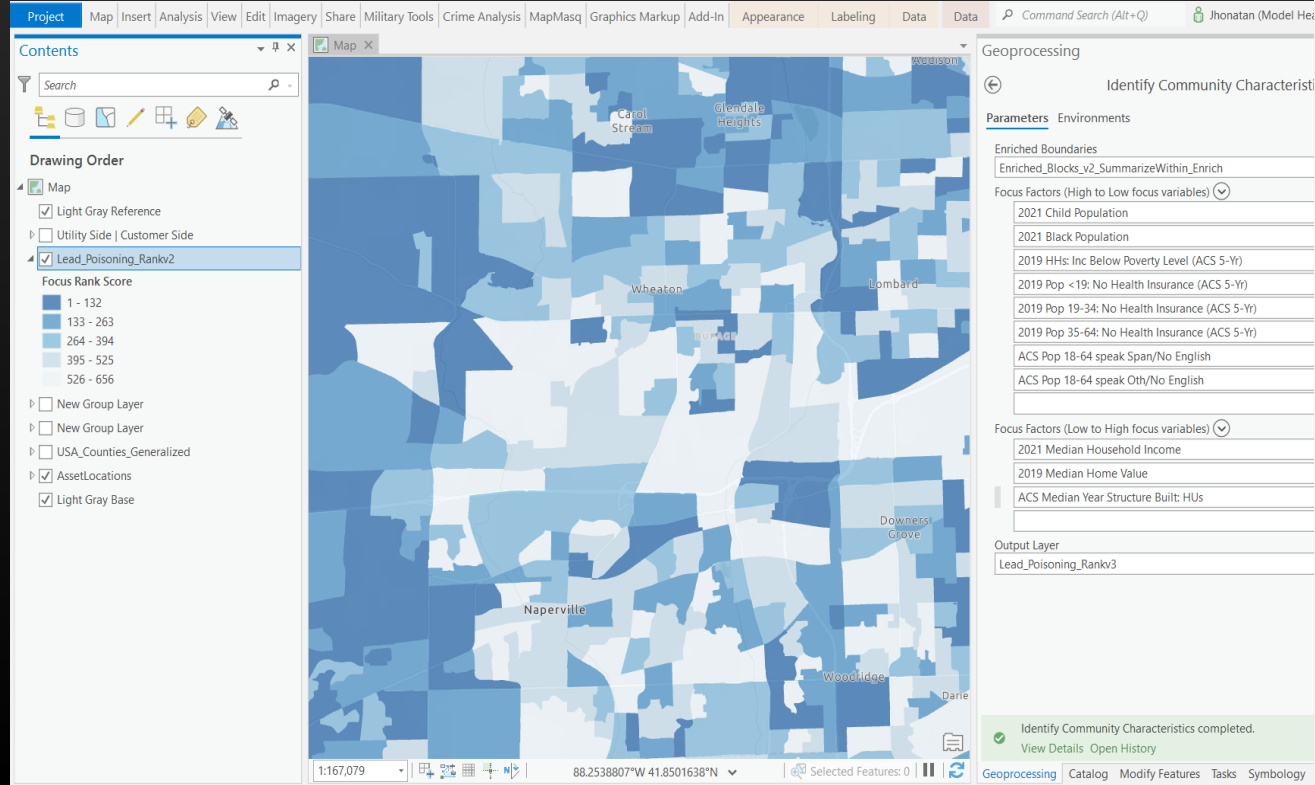
An ArcGIS Hub site used by the general public to view lead service line information.



Social Equity Analysis

- Evaluate community conditions and actions
- Measure progress over time

Evaluate community conditions and actions



Geoprocessing

Identify Community Characteristics

Parameters Environments

Enriched Boundaries

Enriched_Blocks_v2_SummarizeWithin_Enrich

Focus Factors (High to Low focus variables)

2021 Child Population

2021 Black Population

2019 HHs: Inc Below Poverty Level (ACS 5-Yr)

2019 Pop <19: No Health Insurance (ACS 5-Yr)

2019 Pop 19-34: No Health Insurance (ACS 5-Yr)

2019 Pop 35-64: No Health Insurance (ACS 5-Yr)

ACS Pop 18-64 speak Span/No English

ACS Pop 18-64 speak Oth/No English

Focus Factors (Low to High focus variables)

2021 Median Household Income

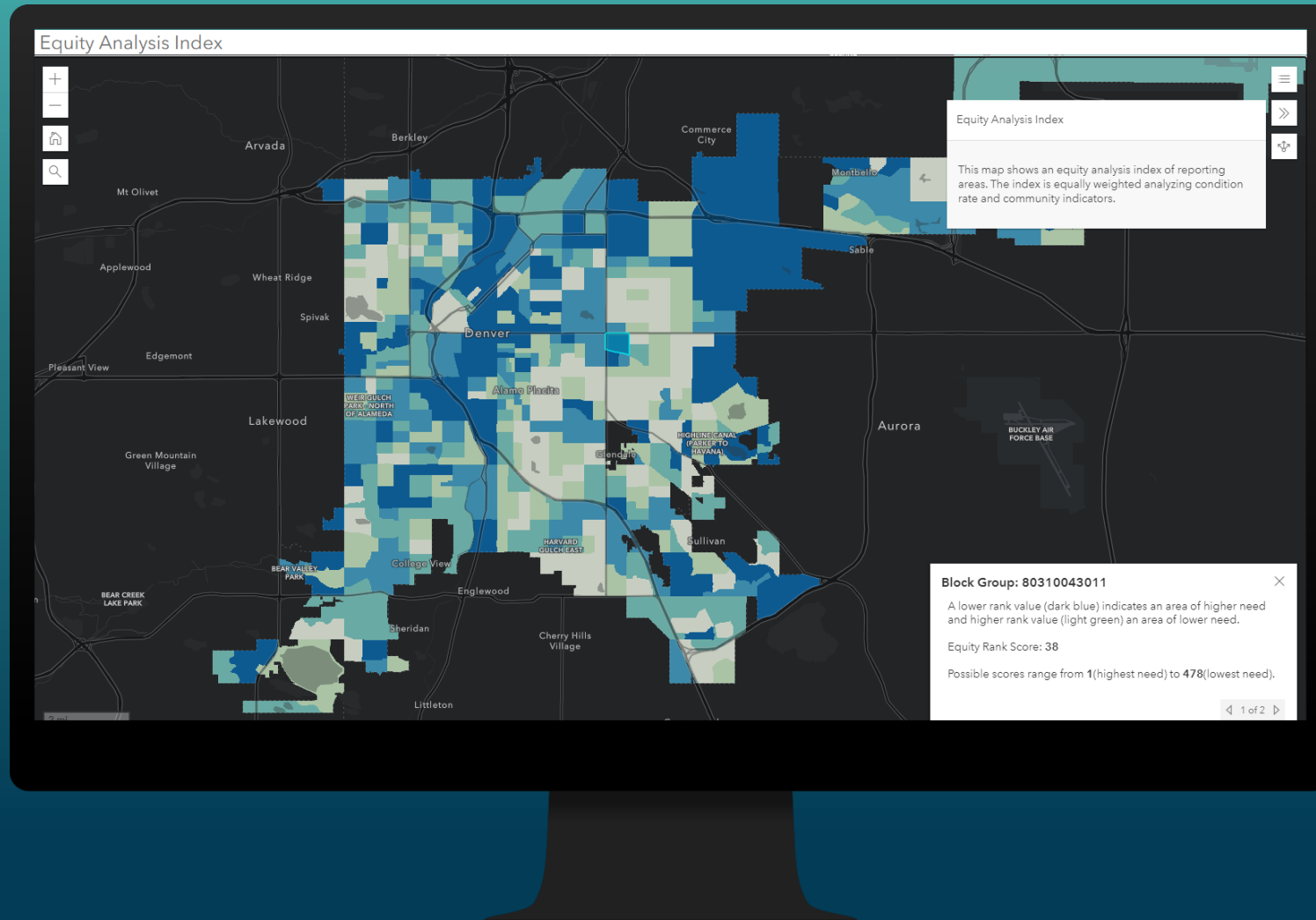
2019 Median Home Value

ACS Median Year Structure Built: HUs

Output Layer

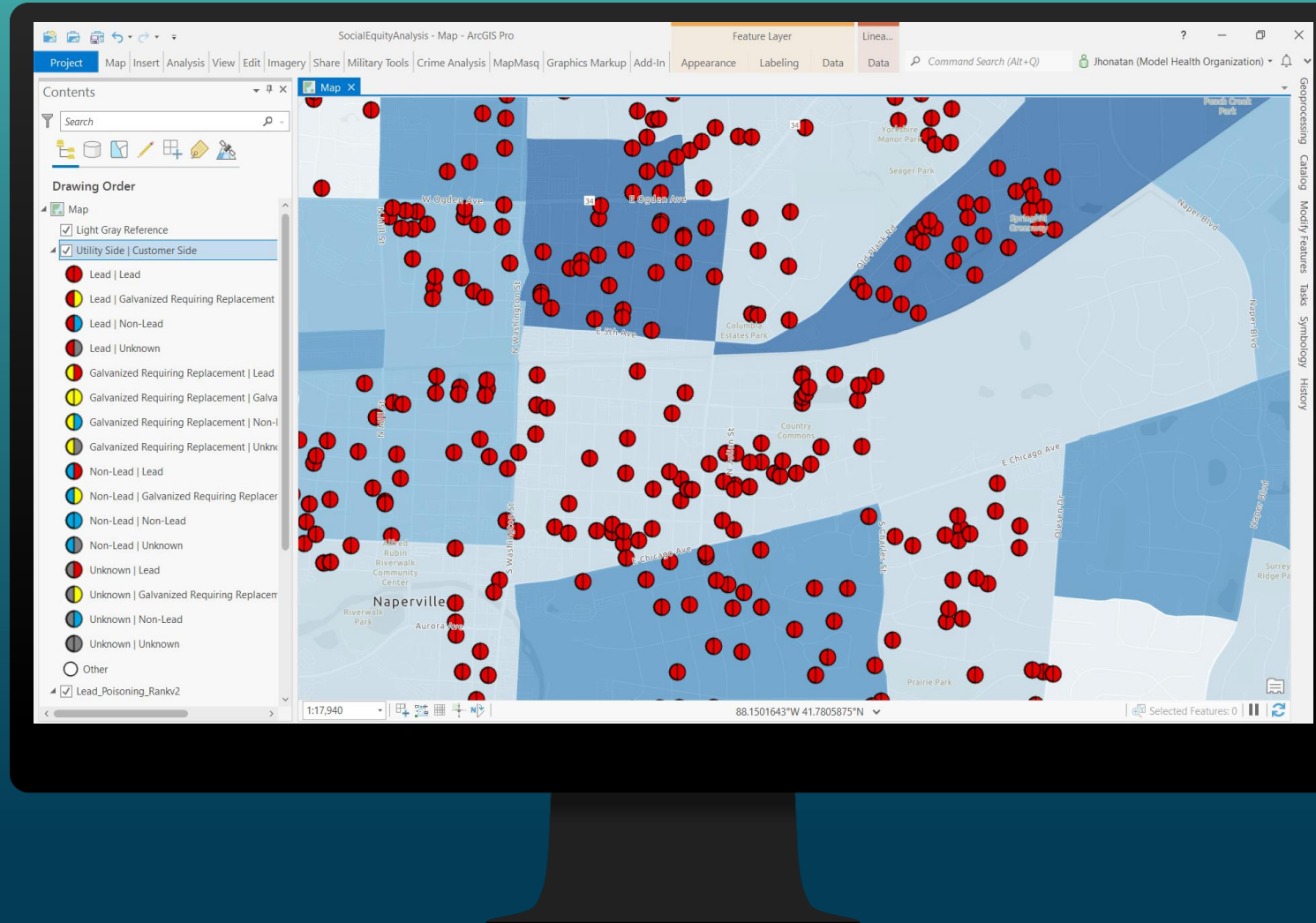
Lead_Poisoning_Rankv3

Measure progress over time



A Media app used by the internal and external stakeholders to view the resulting Equity Analysis Index produced using the Social Equity Analysis ArcGIS Pro project.

Prioritize Lead Inspections



Combining both solutions users can prioritize those areas where inspections for populations at risk.



Addressing Health Equity: Three GIS Essentials

Presentation to: NACo Healthy Counties

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[@PolicyMapper](#)



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