



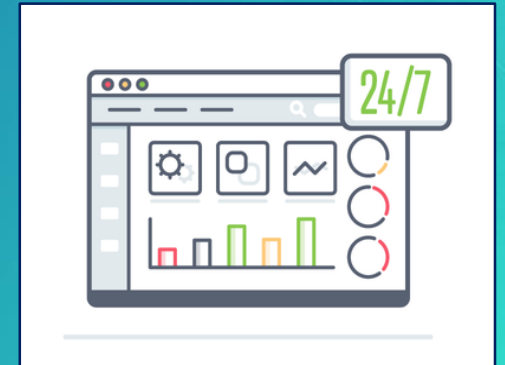
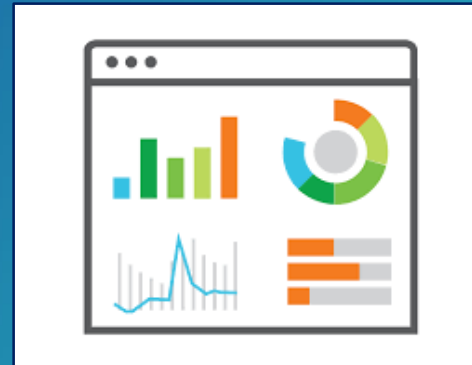
Operations Dashboard for ArcGIS Monitoring GIS Operations

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mlundeen@esri.com



What is a 'dashboard'?

- Conceptual term, can mean different things to different audiences
- Dashboards provide at-a-glance views of key performance indicators (KPIs) for a subject or business process
 - Similar to the idea of a “report”
 - Snapshot of performance
- Data typically on a single display or screen
- Can support real-time data feeds



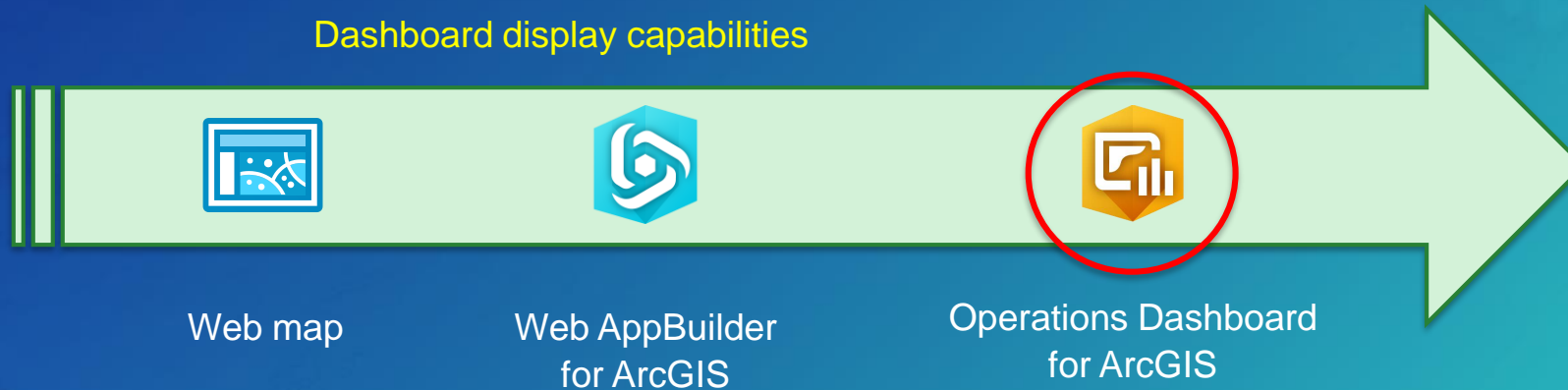
Key Usage Patterns

- **Monitor and manage operations/assets**
 - IoT (e.g., sensor feeds)
 - Provide common operational picture
- **Event Management**
 - Situational awareness, emergency management
 - Visualize assets, personnel, activities, weather
- **Executive summaries**
 - Visualize and compare business data
 - Reporting dashboard



“Dashboards” in the ArcGIS Platform

- Data display typically includes a map or spatial context
- Several different options to create a “dashboard” (the concept) in ArcGIS



Other ArcGIS Apps

- **Insights for ArcGIS**

- Designed for spatial and non-spatial data analysis
- Results are maps, charts, and tables which can be interpreted to be a “dashboard”, but not in the traditional sense



- **ArcGIS Maps for Power BI**

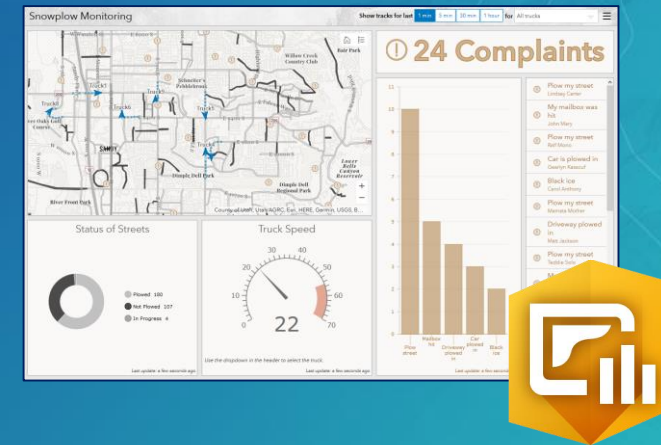
- Add-in for Microsoft Power BI
- Meant to provide mapping capabilities for Power BI users
- “Dashboards” built within Power BI



Operations Dashboard for ArcGIS | Software status

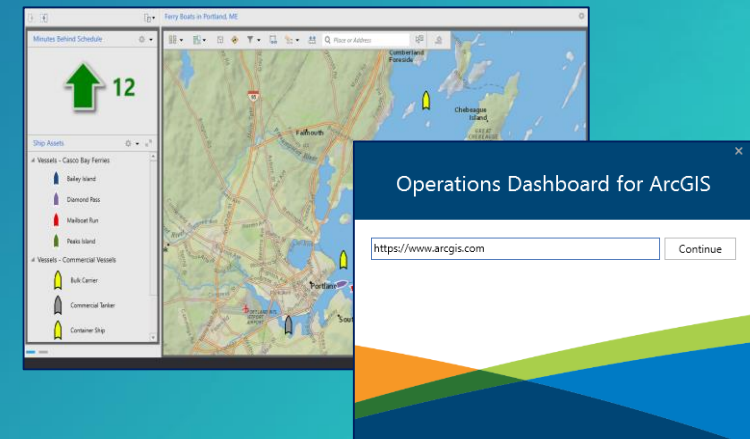
- **New Web-browser-based App**

- Closely integrated with ArcGIS Online
 - ArcGIS Enterprise 10.6 (in Portal for ArcGIS)
- Uses Dashboard item
- Completely re-engineered app
- **Released: Dec 2017**
- 9 attendees in this workshop have used



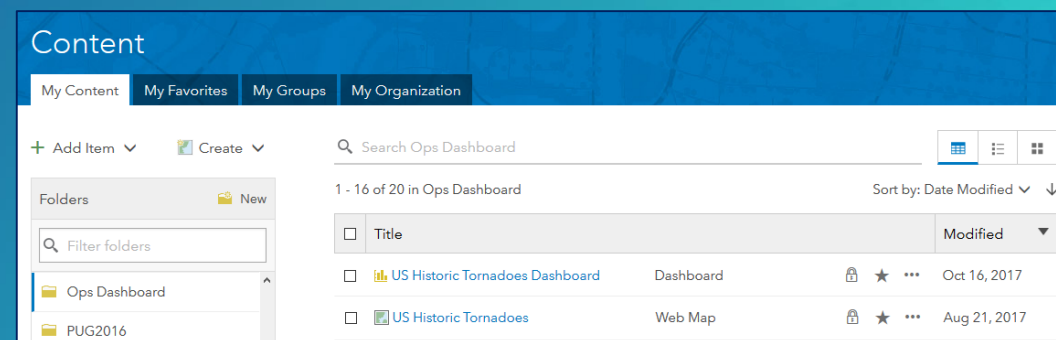
- **Legacy App**

- Windows Desktop + Web browser-based
- Uses Operation View item
 - Author in desktop app, view in web app
- No longer promoted; mature support
- 20 attendees in this workshop have used, 40 WAB



Dashboard Item

- Brings data together in a single display
 - Determines how content is displayed in app
- Composed of elements
 - E.g., map, list, chart, etc.
- Works with many ArcGIS data sources
 - Online content and web services
 - Field collection data
 - Sensor data, social media, GPS locations, etc.
 - Real-time data
- Level 2 user to author



* Operation views cannot be upgraded to a dashboard

Operations Dashboard for ArcGIS | Getting the App

- **ArcGIS Online**

- App is included with your ArcGIS organization
- Available since Dec 2017 update
- Will be updated when ArcGIS Online updates



- **ArcGIS Enterprise**

- Available at 10.6 release (Jan 2018)
- Download separate app installer from *MyEsri* site, install into Portal for ArcGIS machine
- Future releases: will be included with Portal
 - Will not have a separate installer



Getting Started

Getting Started with Operations Dashboard

- Several ways to open the app

1. **App Launcher**

2. **Map Viewer**

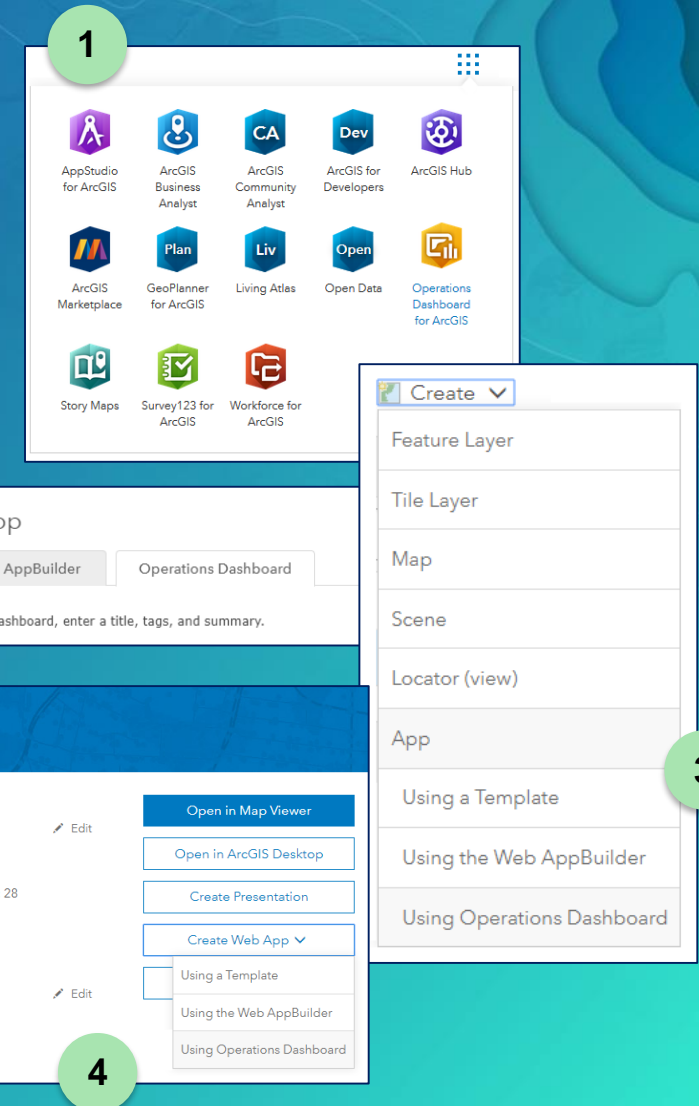
- Share > Create app > Operations Dashboard

3. **Content page**

- Create > App > Operations Dashboard

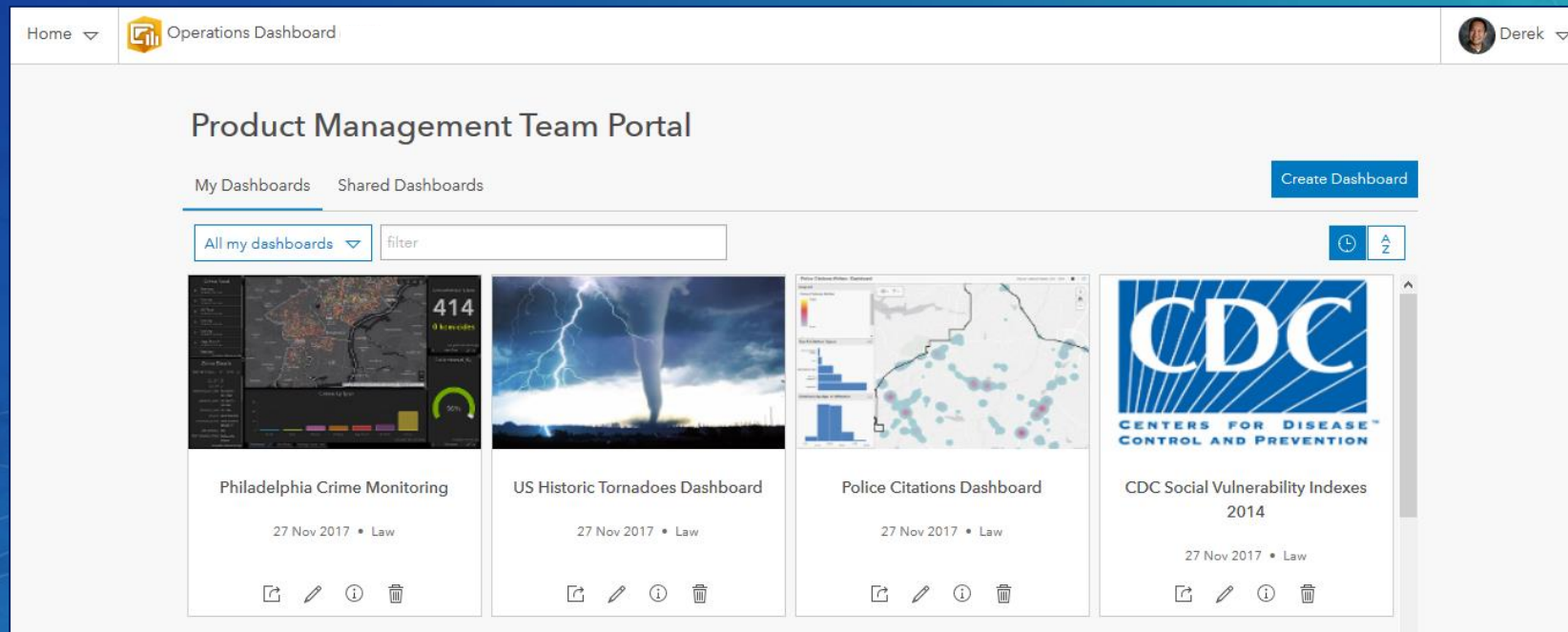
4. **Web Map item page**

- Create Web App > Using Operations Dashboard



Dashboard Home Page

- Create and manage dashboard items
 - View and edit
- Search and sort dashboards in your organization



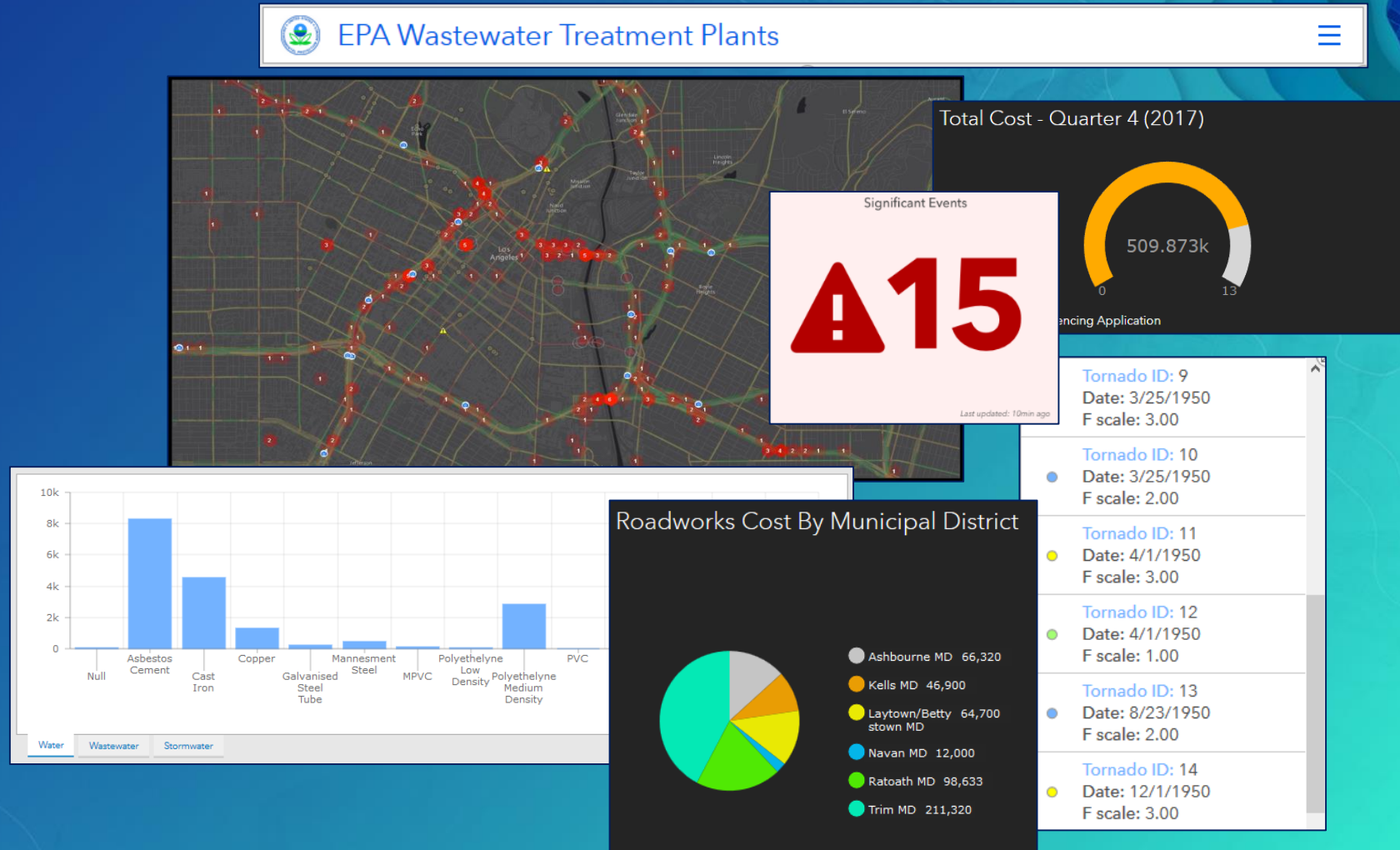
Dashboards

- Can be broadly categorized into 2 general types
 1. **Interactive** → End user interacts with the dashboard to obtain more info
 - Can apply actions and selectors for an interactive UE
 - E.g., Click one element, affects changes in other element(s)
 2. **Unattended display** → Designed to provide updates, no interactivity with end user
 - Typically consume data sources that update, elements would reflect updates
 - E.g., Real-time data, IoT



Dashboard Elements

- Header
- Left Panel
- Map and Map Legend
- Serial chart
- Pie chart
- Indicator
- Gauge
- List
- Details
- Rich text



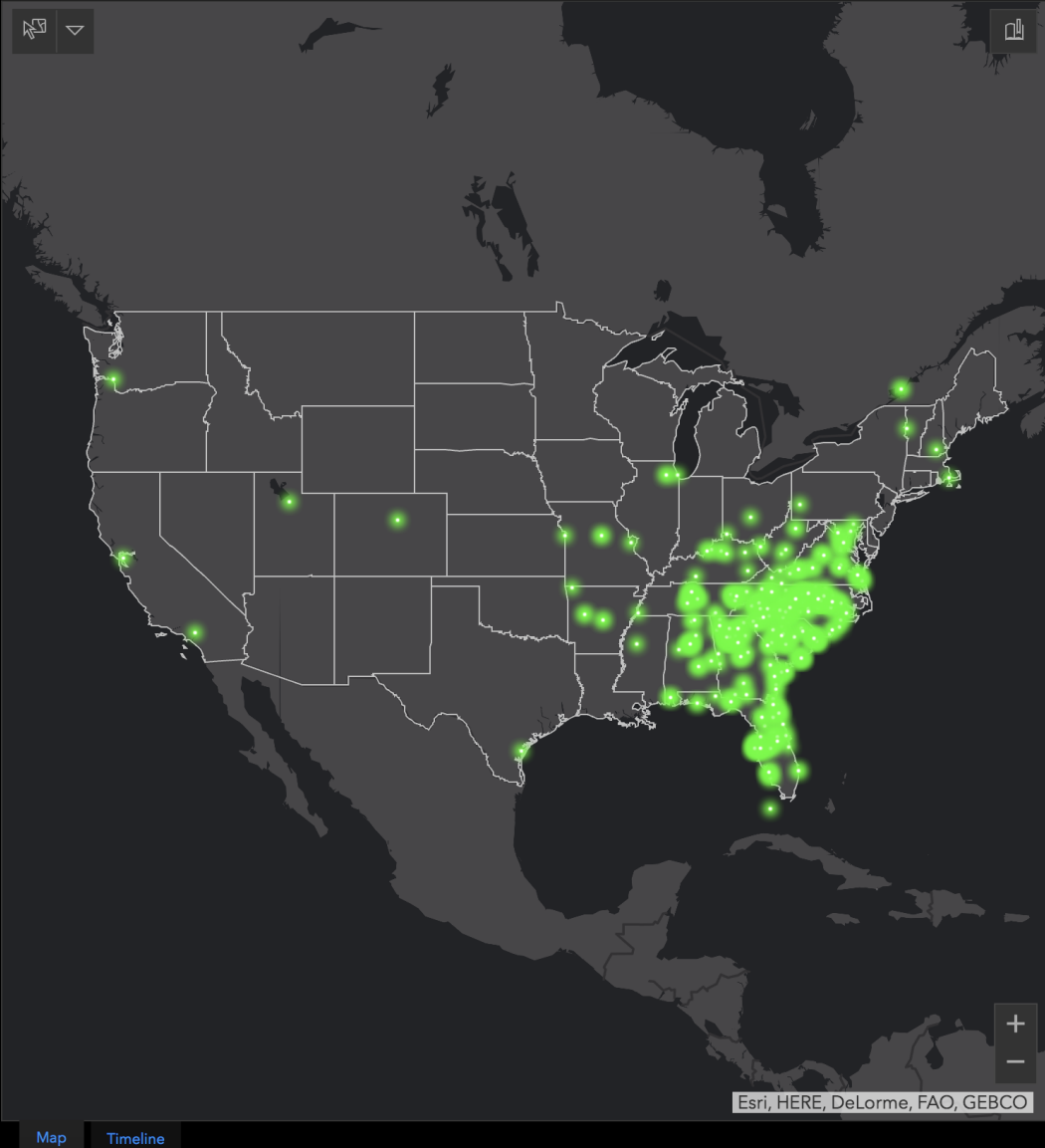
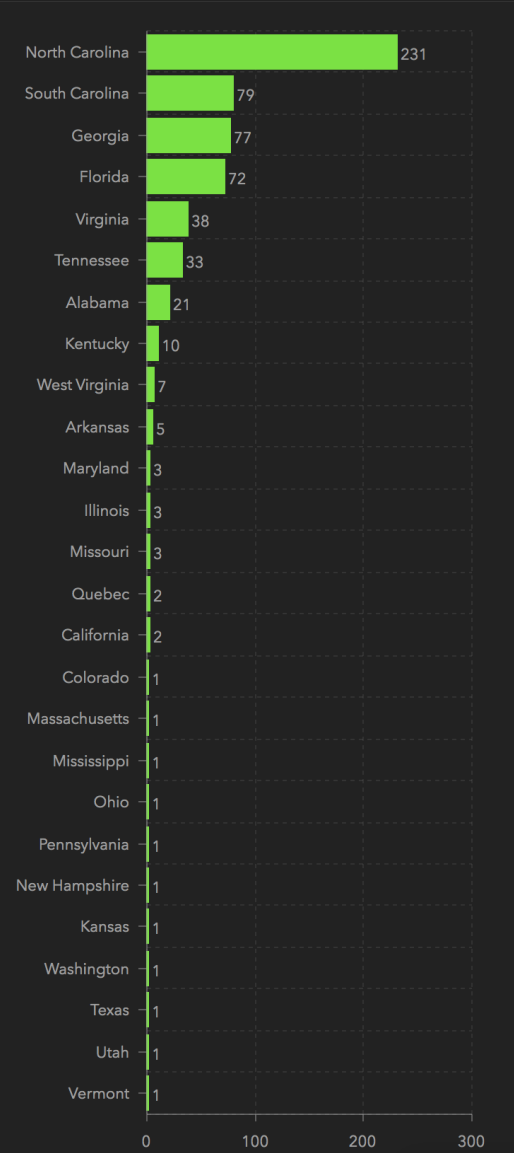
Dashboard Examples

Look for the elements present in each example.

2018 SE UC Attendee Registration

2018 SE UC Registration Dashboard

Date Registered [Show All](#) [Last Week](#) [Last Month](#) ≡



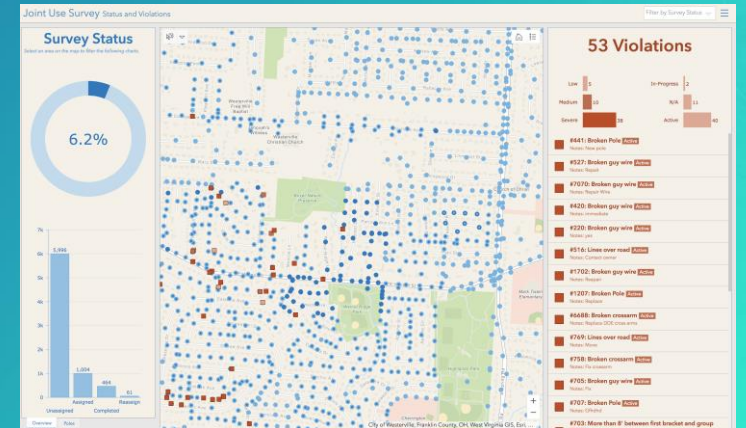
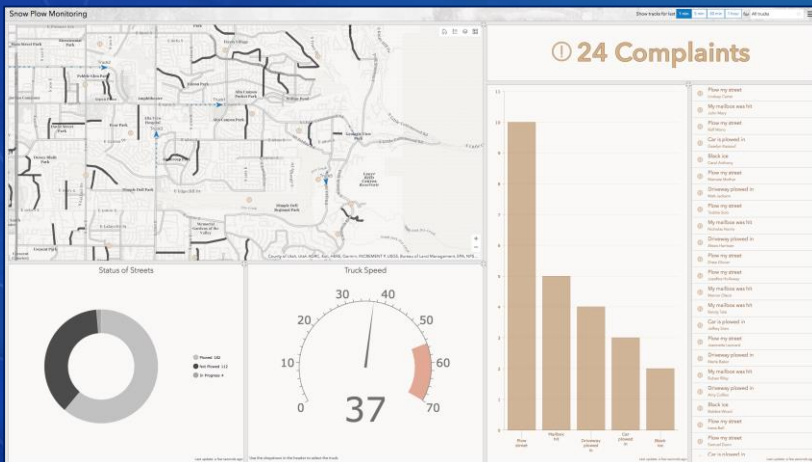
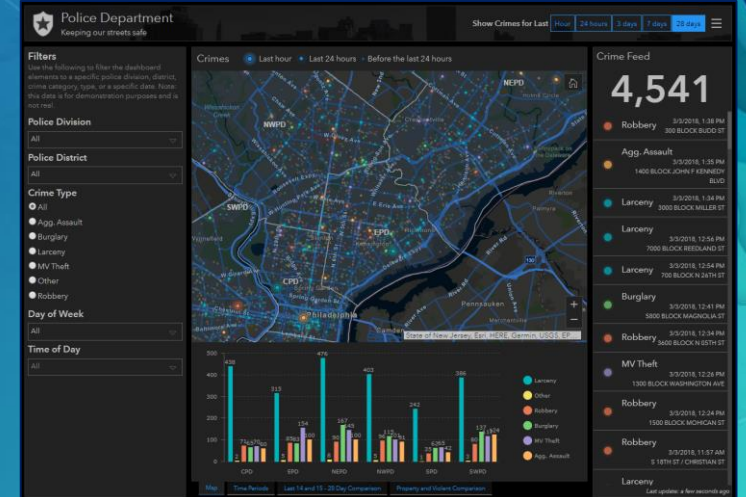
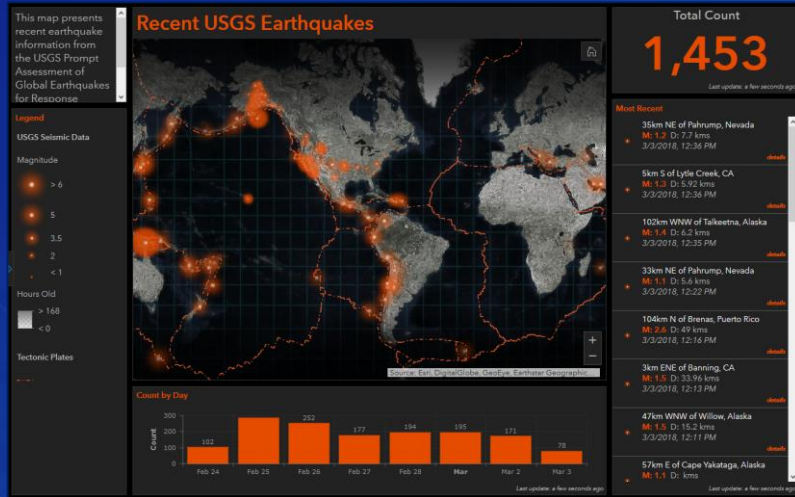
597

- Abraham Land Surveying LLC**
Matt Loignon, [GIS](#)
- Abraham Land Surveying LLC**
Jeff Fellers, [GIS Specialist](#)
- Abraham Land Surveying, LLC**
Tad Abraham, [Principal](#)
- Accenture**
Badri Lokanathan, [Senior Manager](#)
- ADEM Response and Recovery Division**
Taunya Kidd, [Operations](#)
- AECOM**
Matthew Cieri, [GIS Analyst Programmer](#)
- AECOM**
Will Rumley, [GIS Mobile & Web Systems Administrator](#)
- AECOM**
Zsolt Nagy, [Senior Manager](#)
- AECOM**
Robbi McKinney, [Project Manager](#)
- AECOM**
Todd McAulliffe, [Planner/GIS Analyst](#)
- Alabama Housing Finance Authority**
Dondra Houlditch, [Multifamily Technician](#)
- Alachua County Dept of Growth Management**
Robert Jensen, [GIS Analyst](#)
- Alachua County Public Works**
Sara Arnold, [GIS Specialist](#)
- Alamance County**
Toyia Hayes, [GIS Technician](#)
- Alamance County**
Marlena Isley, [GIS Director](#)

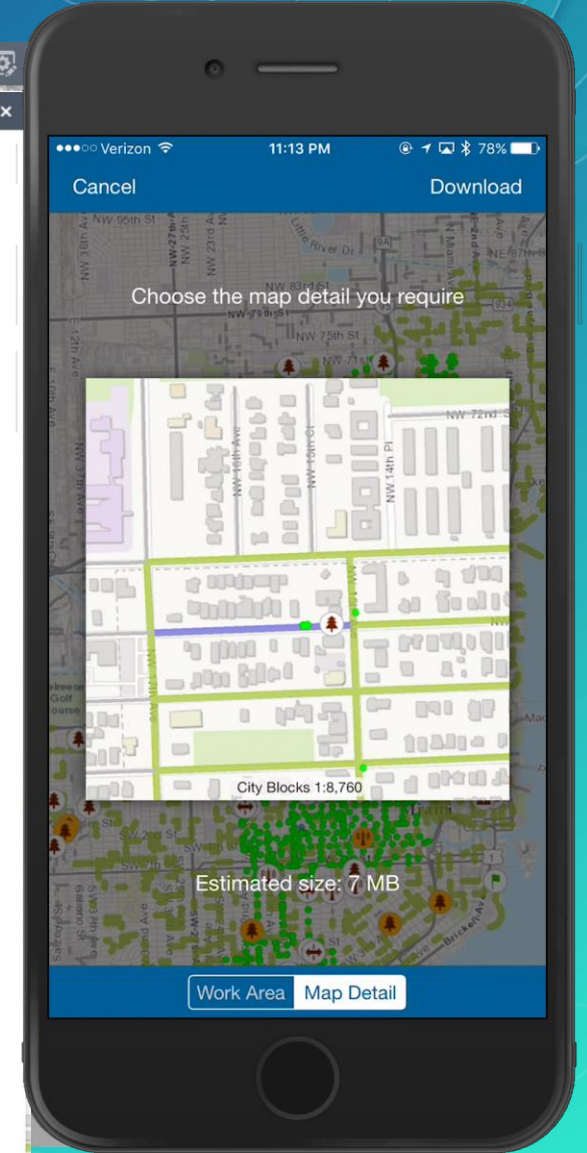
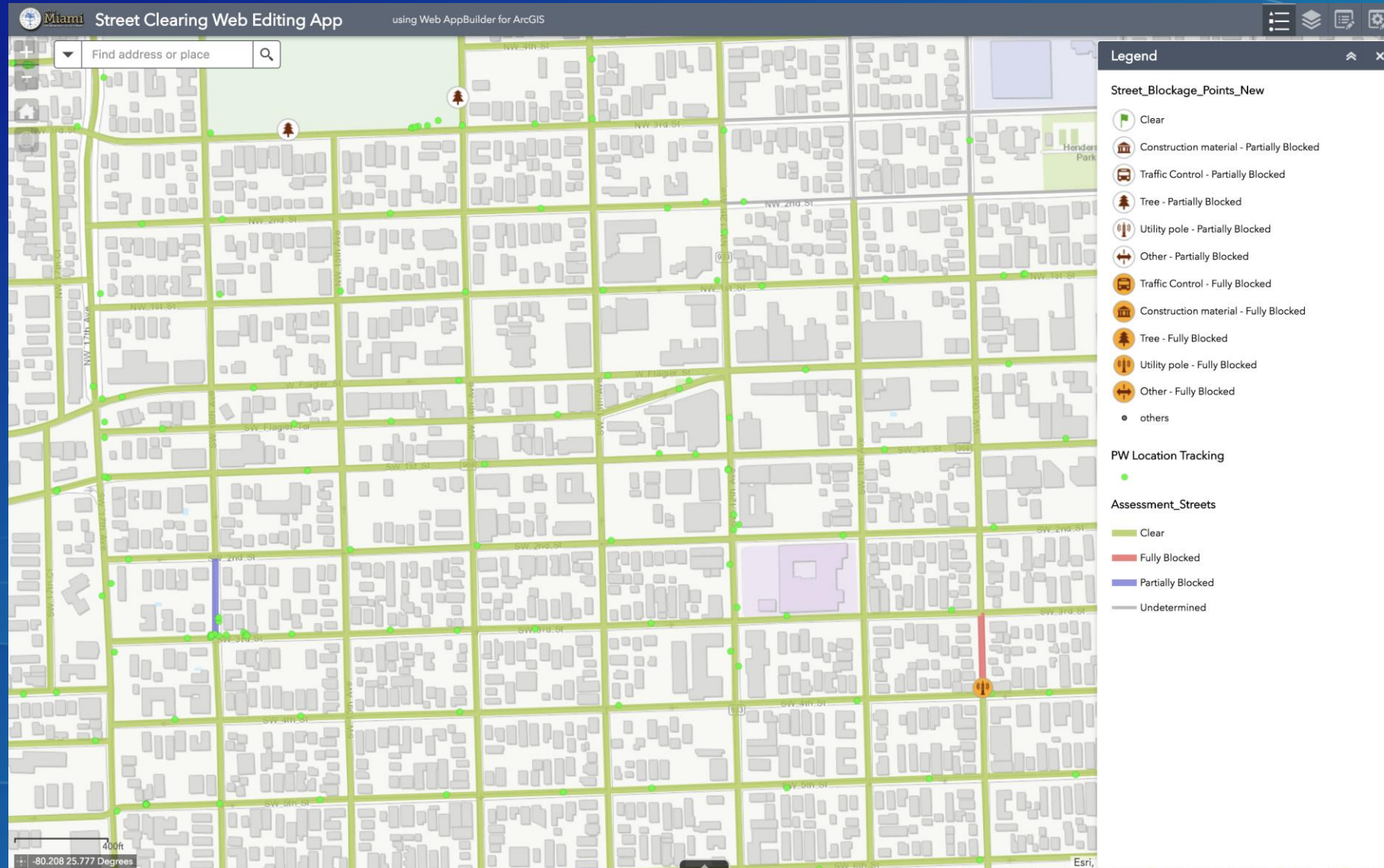
Last update: a few seconds ago

[All Titles](#) [GIS](#) [Student or Professor](#) [Director](#) [Other](#)

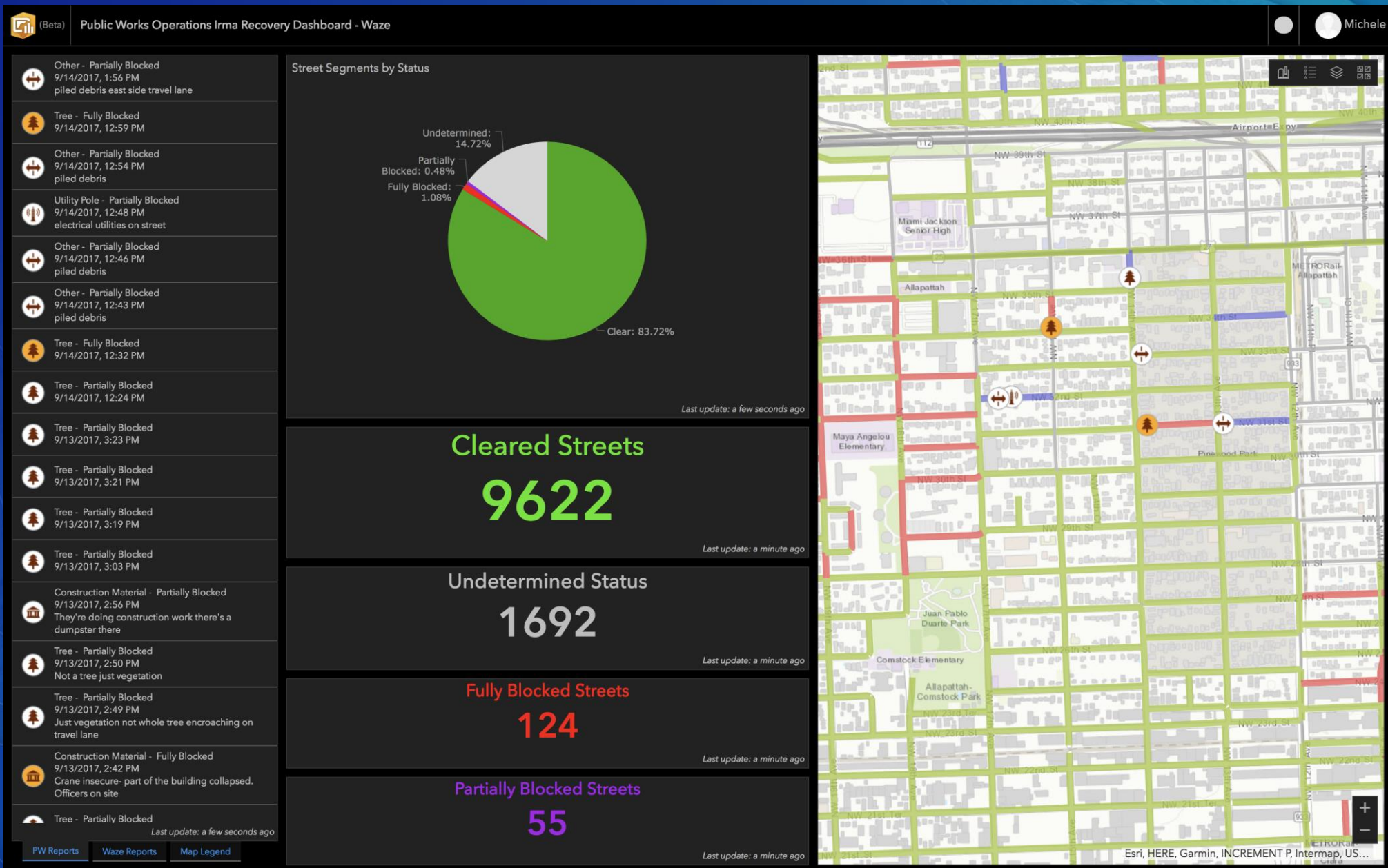
Esri Demo Dashboards



City of Miami – Public Works Operations



City of Miami – Public Works Operations



Getting Started with Operations Dashboard

- Several ways to open the app

1. **App Launcher**

2. **Map Viewer**

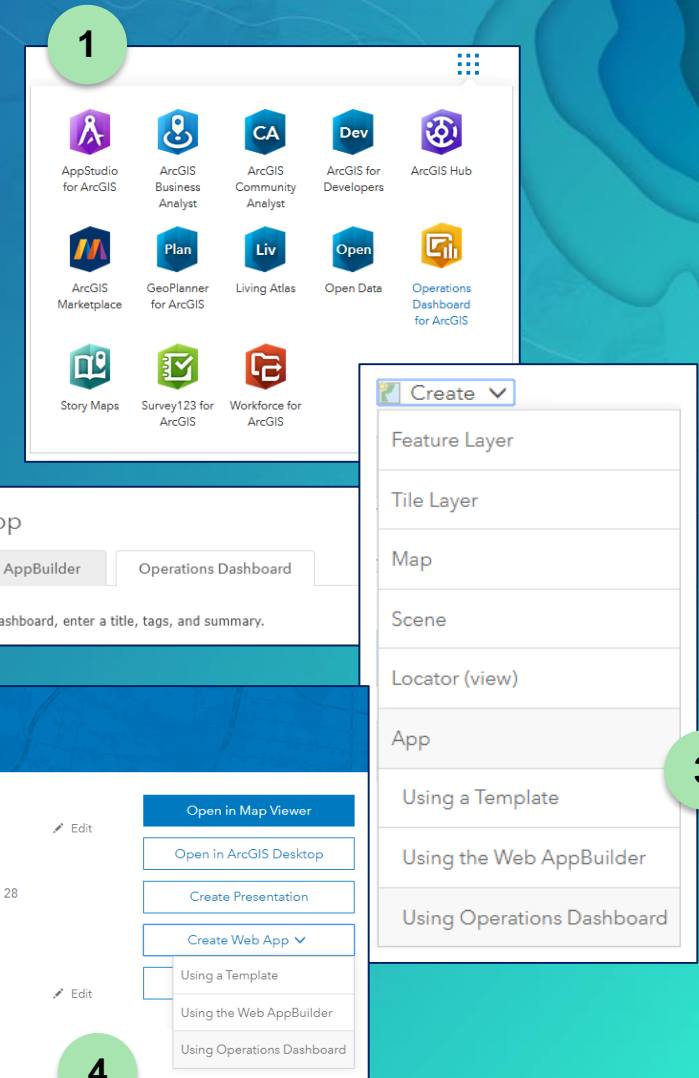
- Share > Create app > Operations Dashboard

3. **Content page**

- Create > App > Operations Dashboard

4. **Web Map item page**

- Create Web App > Using Operations Dashboard



Dashboard Home Page

- Create and manage dashboard items
 - View and edit
- Search and sort dashboards in your organization

The screenshot displays the 'Product Management Team Portal' dashboard. At the top, there is a navigation bar with 'Home' and 'Operations Dashboard' links, and a user profile for 'Derek'. Below the navigation bar, the page title 'Product Management Team Portal' is centered. Underneath, there are tabs for 'My Dashboards' and 'Shared Dashboards', and a 'Create Dashboard' button. A search bar labeled 'filter' and a dropdown menu showing 'All my dashboards' are present. To the right of the search bar are icons for a clock and a list. The main content area features four dashboard cards, each with a thumbnail image, a title, a date, and a user name, along with icons for view, edit, info, and delete. The cards are: 'Philadelphia Crime Monitoring' (showing a map and a count of 414), 'US Historic Tornadoes Dashboard' (showing a tornado), 'Police Citations Dashboard' (showing a map and a bar chart), and 'CDC Social Vulnerability Indexes 2014' (showing the CDC logo).

Home ▾ Operations Dashboard

Derek ▾

Product Management Team Portal

My Dashboards Shared Dashboards

Create Dashboard

All my dashboards ▾ filter

🕒 ⌵

Philadelphia Crime Monitoring

27 Nov 2017 • Law

📄 ✎ ⓘ 🗑️

US Historic Tornadoes Dashboard

27 Nov 2017 • Law

📄 ✎ ⓘ 🗑️

Police Citations Dashboard

27 Nov 2017 • Law

📄 ✎ ⓘ 🗑️

CDC Social Vulnerability Indexes 2014

27 Nov 2017 • Law

📄 ✎ ⓘ 🗑️

Demo

- Building a useful Dashboard in 10 minutes or less

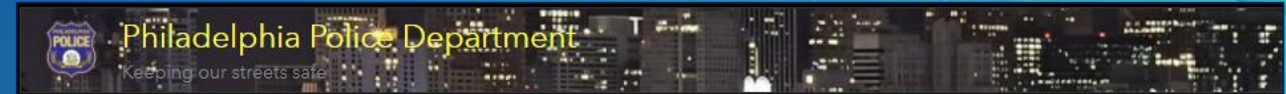
Dashboard Elements - Details

This is a bonus section with some additional details not presented during our 1 hour Southeast User Conference technical session.

Header and Left Panel Elements

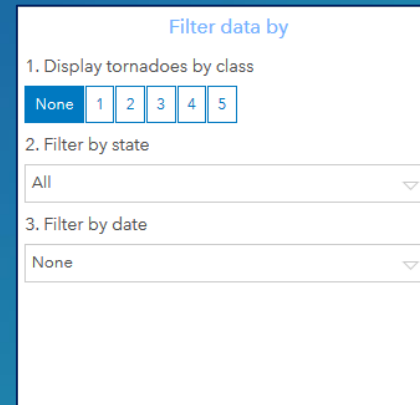
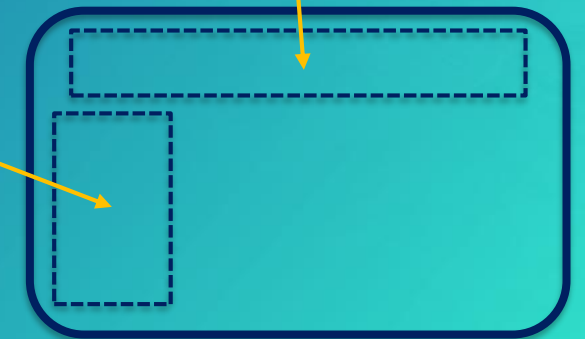
- **Header**

- Provides a title, subtitle, logo and background for branding; 3 sizes
- Options
 - Selectors for interactivity
 - Hyperlinks
 - Sign Out link



- **Left Panel**

- Used to contain selectors for interactivity
- Title, description
- Optional: retract in display

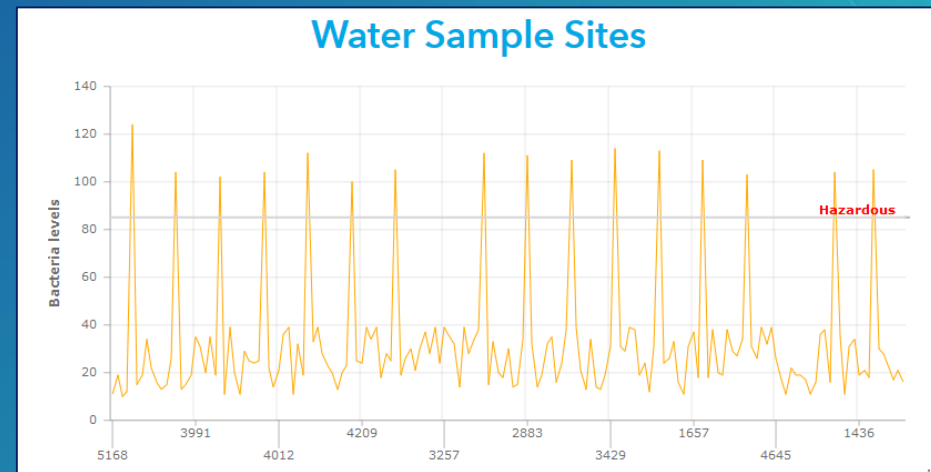
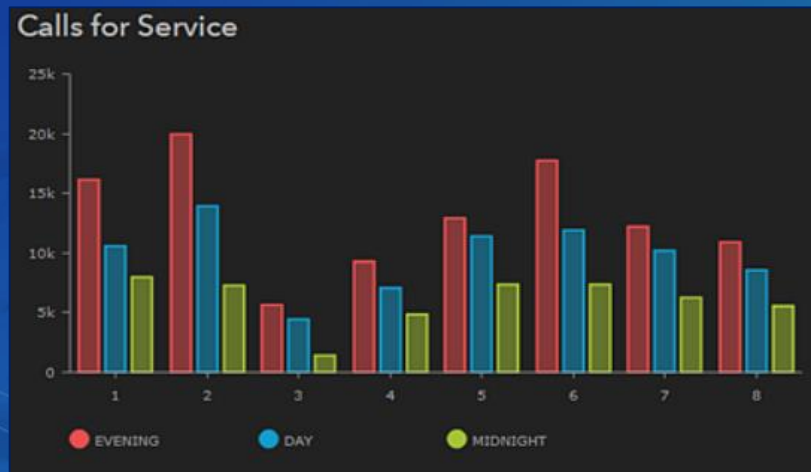
A vertical panel titled "Filter data by" in blue. It contains three sections: 1. "Display tornadoes by class" with a row of buttons labeled "None", "1", "2", "3", "4", and "5". The "None" button is highlighted in blue. 2. "Filter by state" with a dropdown menu showing "All". 3. "Filter by date" with a dropdown menu showing "None".

Dashboard

- Their layout locations do not change

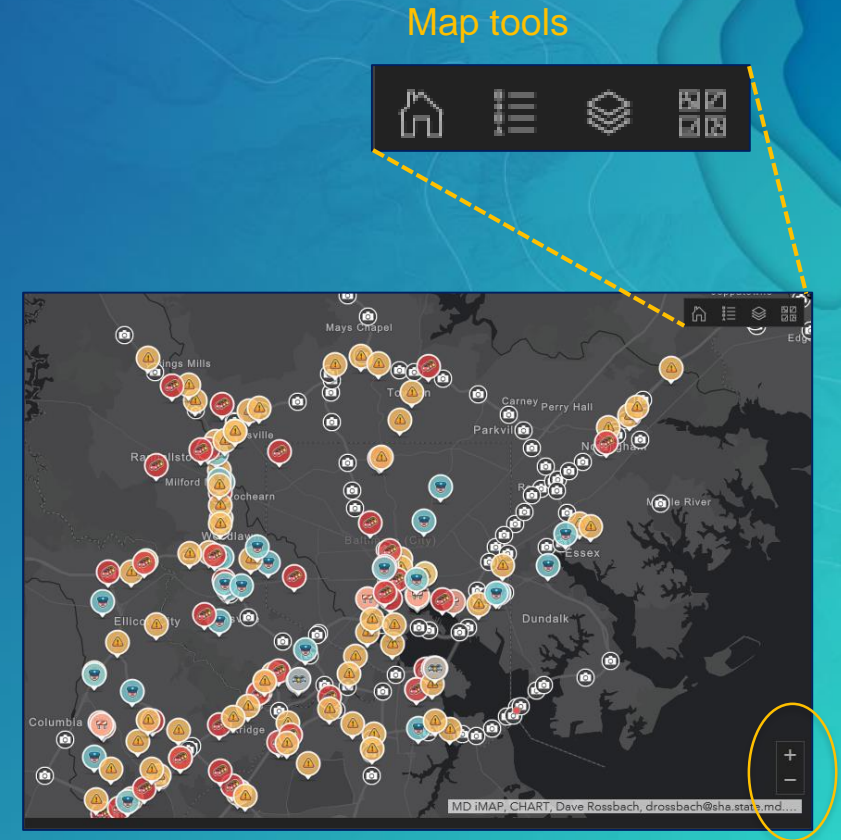
Serial Chart Element

- Visualizes one or more series of data points on a x/y graph
- They can be used to show one or more datasets
- Bar, line, and smooth line charts are supported



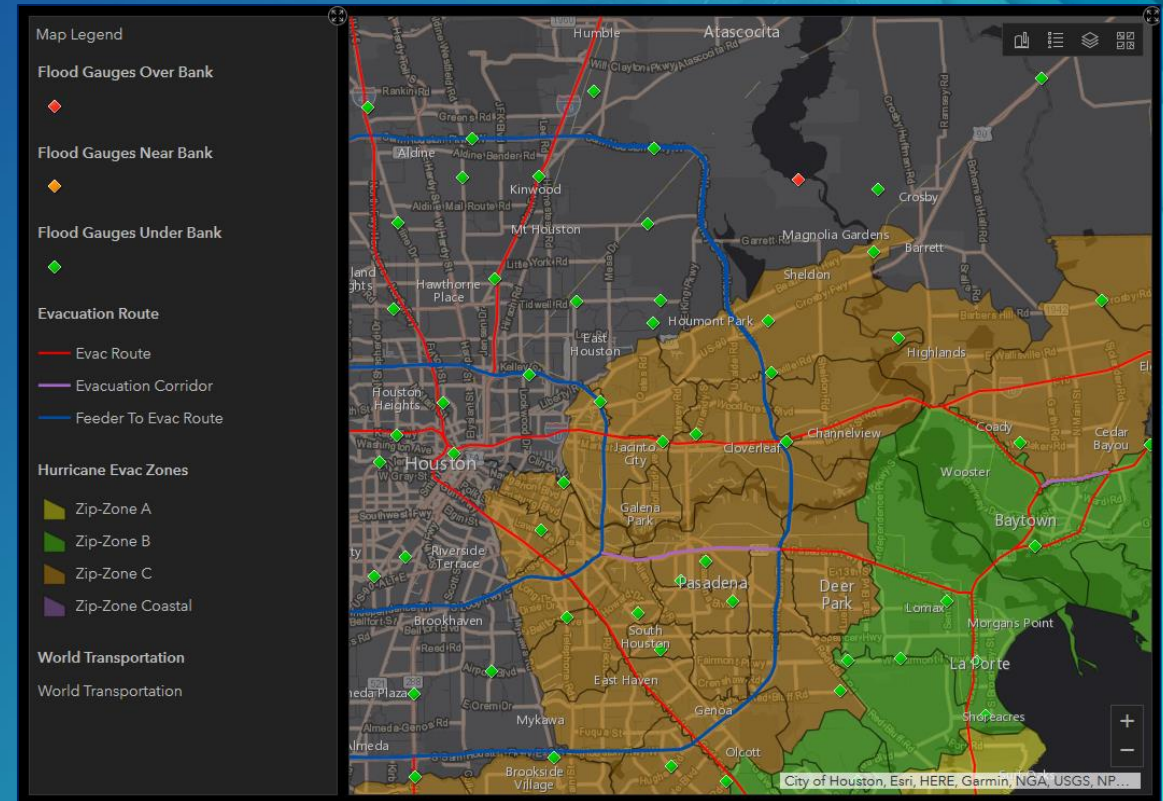
Map Element

- Displays geographic and spatial data
- Composed of web map
 - Web layers can be used by other elements
- Properties
 - Select web map; define title and description
 - Can enable pop-ups
 - Optional map tools
 - Default spatial extent and bookmarks
 - Legend, layer visibility, basemap and zoom in/out
- A dashboard can have multiple map elements



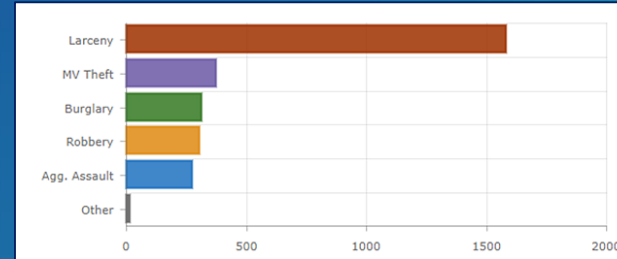
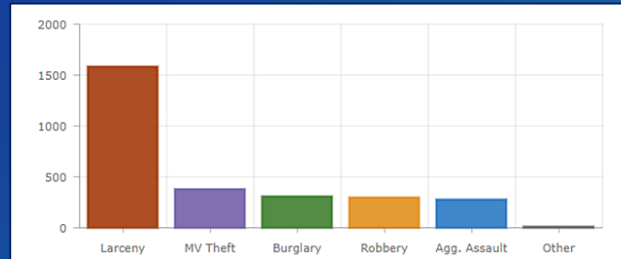
Map Legend Element

- Provides a legend for a map element
- Contents determine by map layers
 - Ordered determined by web map
- Respects layer visibility and scale ranges
- Properties
 - Title and description

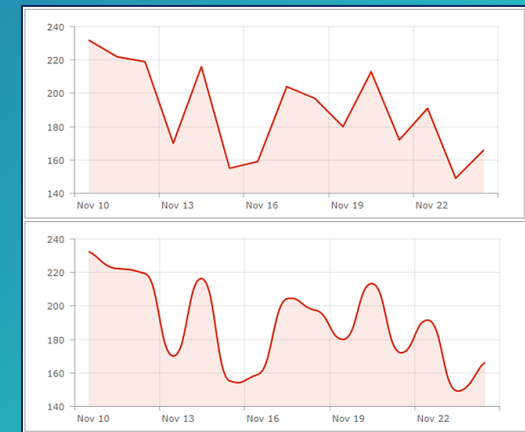
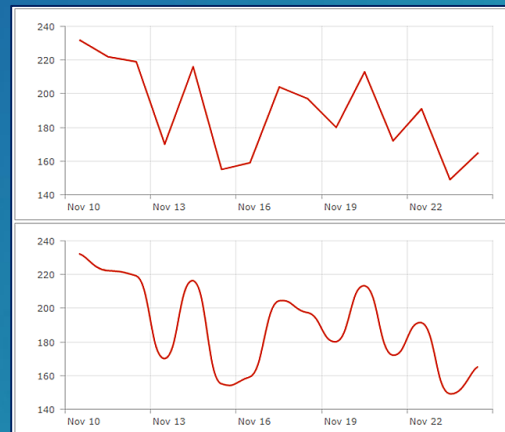


Serial Chart Types

- **Bar charts** → Display data with discrete categories (e.g., types of crime)



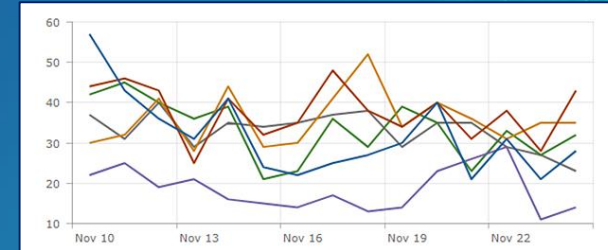
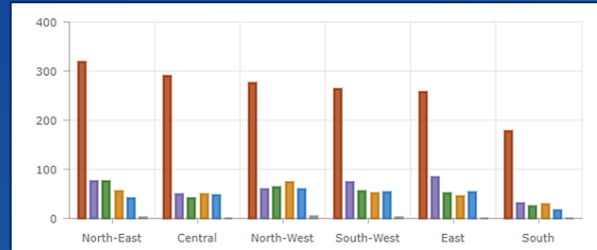
- **Line and smooth line charts** → Display data with continuous categories (e.g., dates)
 - Can also be rendered as area charts



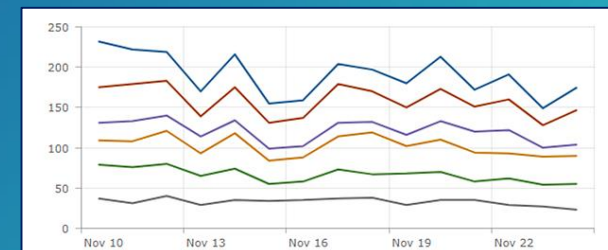
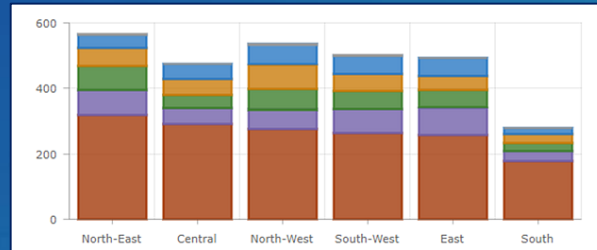
Serial Chart Types

- **Multi-series charts** → Display multiple datasets, used to compare different datasets

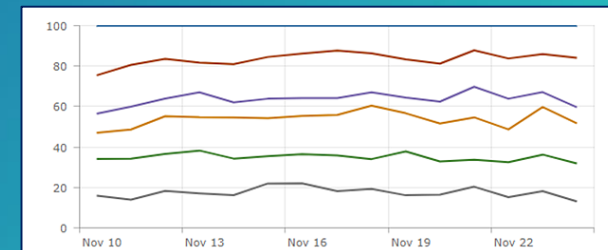
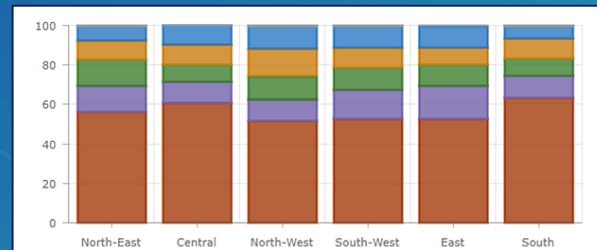
- Grouped



- Stacked

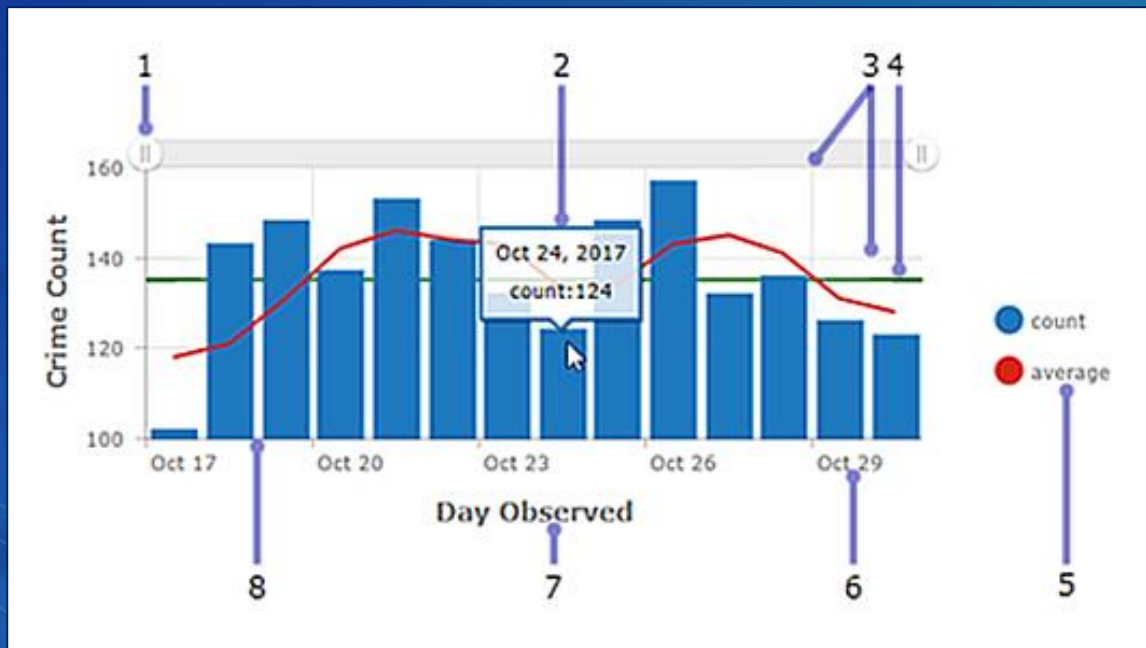


- 100% stacked



Anatomy of a Serial Chart

- Common components
 - All are configurable properties of the element



1. Scrollbar
2. Hover text
3. Grid lines
4. Guides
5. Legend
6. Label
7. Axis title
8. Axis

Properties

Serial Chart Properties

- Properties

- Title and description
- Format chart
 - Text color, font, orientation
 - Title, axis, scrollbar
 - Labels: placement and size
 - Guides
 - Grid lines
 - Legend (for series data)
- Data: Can apply filters, categorize
 - Apply statistics
 - Format dates
 - Sort data

The image displays three overlapping property panels for a serial chart, set against a blue background with a topographic map pattern.

Category Axis Panel:

- Title: Sample Sites
- Title Size (px): Default
- Scrollbar: ☐
- Labels: ☒
- Visibility: ☒
- Size (px): Default
- Placement: Default | Staggered
- Category: | Label: | No Override Default
- Null: | Blank:
- + Override | Load Categories

Value Axis Panel:

- Integers Only: ☐
- Labels: ☒
- Visibility: ☒
- Size (px): Default
- Formatting: ☒ | Prefix: ☒
- Axis:
- Color:
- Opacity:
- Thickness:

Guides Panel:

- Guide 1
- Label: Hazardous
- Color:
- Position: Left | Right
- Location: Inside | Outside
- Value: 85
- Line Color:
- Line Opacity:
- Line Thickness:
- To Value: Undefined
- Rendered: Above | Below

Serial Chart – Data Format Options

- Specify data source: map and feature layers supported
 - Apply filter(s)
 - Define category based on
 1. **Grouped values** → Each unique value in a field
 2. **Features** → Every feature in a field
 3. **Fields** → One or more numeric fields are selected
 - Parse dates
 - Statistics
 - Count, Avg, Min, Max, Sum, & Standard deviation
 - Sorting
- Can preview the data

Data Options [Show data table](#)

Data Using 'US_Historic_Tornadoes' layer [Change](#)

Chart

Category Axis Filter [+ Filter](#)

Value Axis

Guides Categories From [Grouped Values](#) [Features](#) [Fields](#)

Series Category Field YEAR ▼

General Parse Dates ☐

Split By Field ▼

Statistic Count ▼

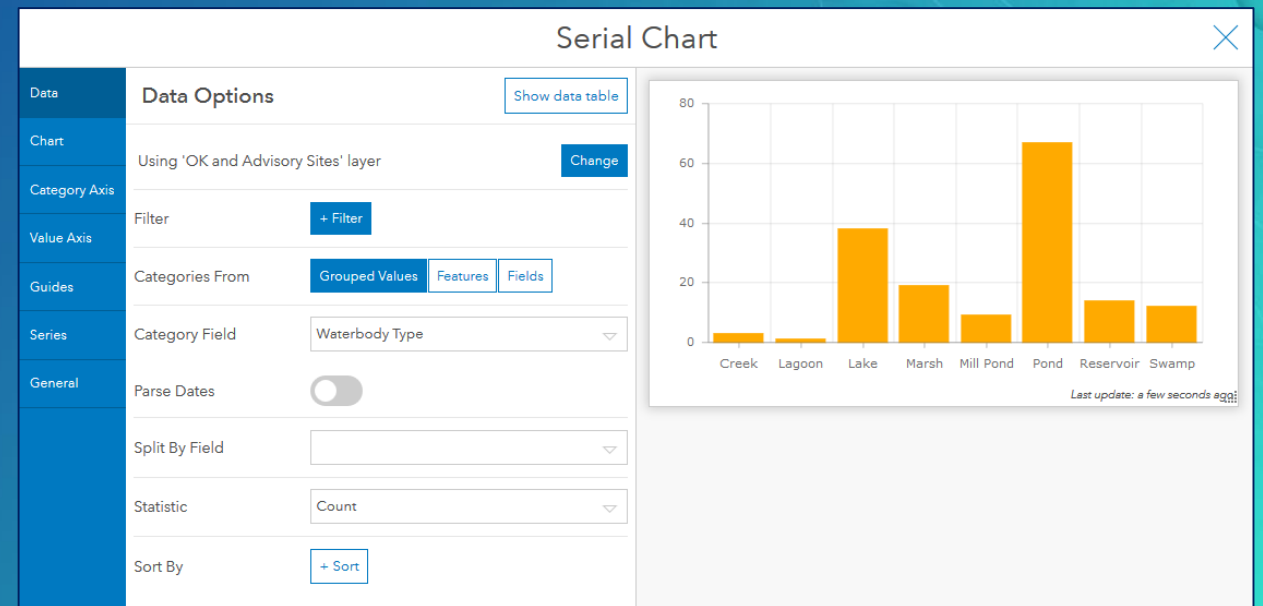
Sort By YEAR ▼

Categories: Grouped Values

- Display all unique values in a field
- E.g., all water body types

Waterbody Type	Station Number	Sample Date	Sample Time	Weather	Wind Direction	Rainfall
Lake	5168	1470268800000	13:21	Rain	NE	0.84
Lake	5641	1470096000000	08:24	Rain	NE	0.84
Reservoir	1612	1470268800000	09:21	Cloud	NE	0.84
Lake	2820	1470355200000	10:11	Fair	NE	0.84
Swamp	5908	1467936000000	09:11	Cloud	NE	0.84
Swamp	5370	1470268800000	08:21	Cloud	NE	0.92
Lake	3487	1470268800000	15:24	Fair	NE	0.92
Lake	2151	1470268800000	14:53	Cloud	NE	0.92
Reservoir	5945	1470528000000	11:15	Cloud	NE	0.92

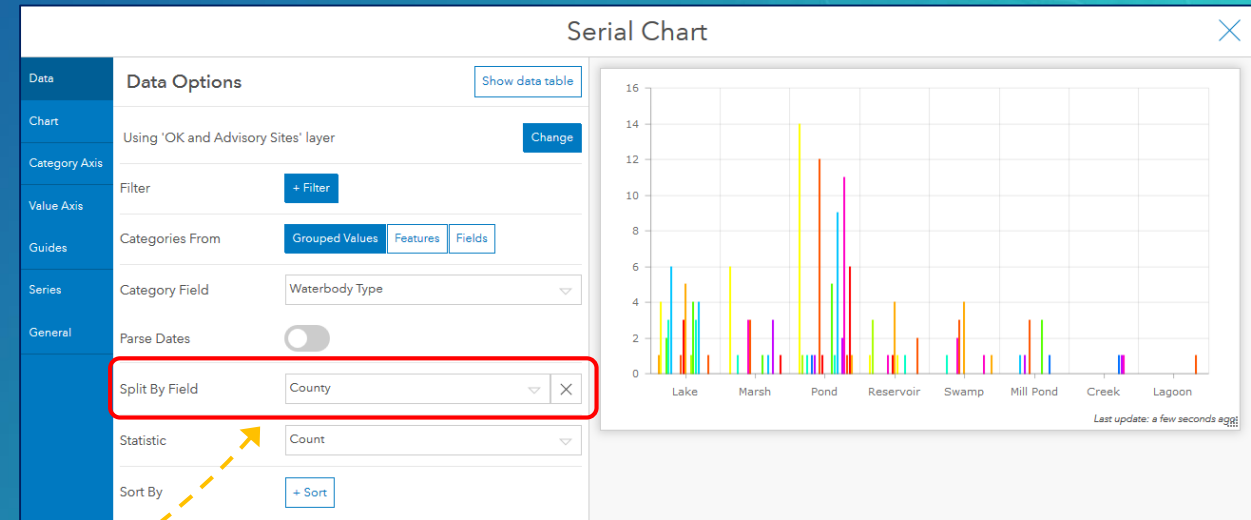
Showing 163 features



Categories: Grouped Values

- Optional: “split-by” field → Enables data to be split into multiple data series (for each unique value in the “split-by” field)
- E.g., all water body types; split-by county

Waterbody Name	Waterbody Type	Station Number	Rainfall	County	Water Temperature	Air Temperature
New Germany Lake	Lake	5168	0.84	Garrett	67.10	84.20
Lake Louise	Lake	5641	0.84	Garrett	69.60	84.40
Frostburg Reservoir	Reservoir	1612	0.84	Garrett	69.00	71.50
Herrington, Lake	Lake	2820	0.84	Garrett	70.40	86.60
Pine Swamp	Swamp	5908	0.84	Garrett	71.60	68.00
Pine Swamp	Swamp	5370	0.92	Garrett	72.20	78.40
Cunningham Lake	Lake	3487	0.92	Garrett	73.30	70.30
Deep Creek Lake	Lake	2151	0.92	Garrett	72.60	74.50
Little Youghiogheny River Reservoir	Reservoir	5945	0.92	Garrett	68.90	90.40
Little Yok Reservoir Site Number 5	Reservoir	3735	0.92	Garrett	69.80	89.60

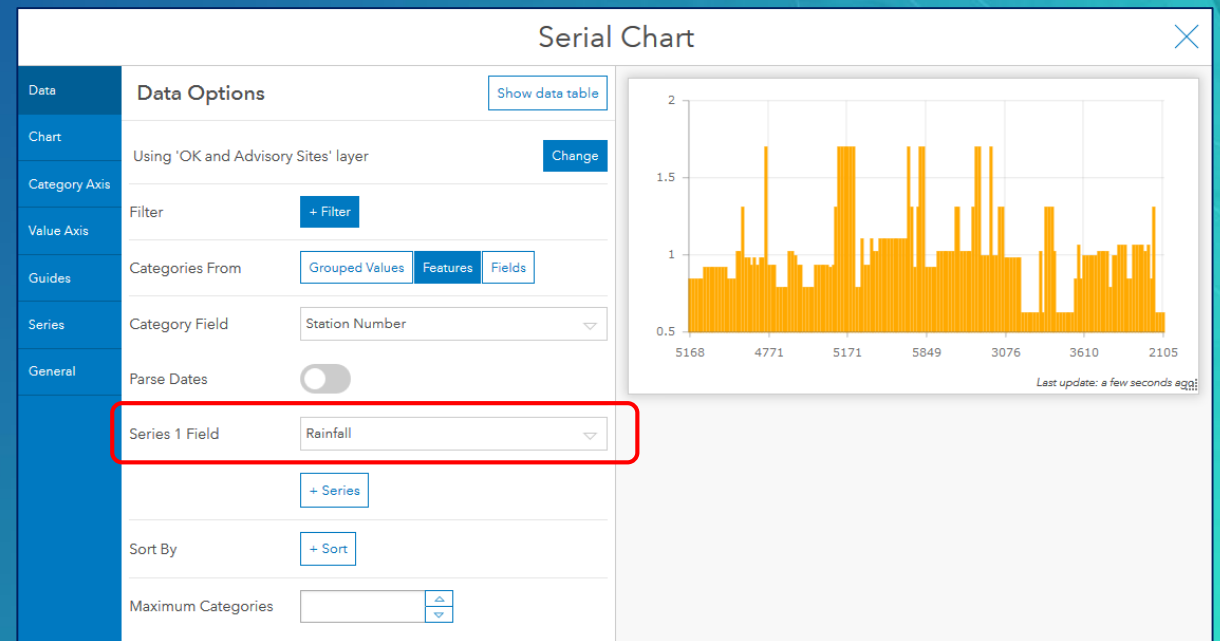


Categories: Features

- Display all records in a field, then select series field
- E.g., all sample stations, then compare rainfall

Waterbody Type	Station Number	Sample Date	Sample Time	Weather	Wind Direction	Rainfall
Lake	5168	1470268800000	13:21	Rain	NE	0.84
Lake	5641	1470096000000	08:24	Rain	NE	0.84
Reservoir	1612	1470268800000	09:21	Cloud	NE	0.84
Lake	2820	1470355200000	10:11	Fair	NE	0.84
Swamp	5908	1467936000000	09:11	Cloud	NE	0.84
Swamp	5370	1470268800000	08:21	Cloud	NE	0.92
Lake	3487	1470268800000	15:24	Fair	NE	0.92
Lake	2151	1470268800000	14:53	Cloud	NE	0.92
Reservoir	5945	1470528000000	11:15	Cloud	NE	0.92

Showing 163 features

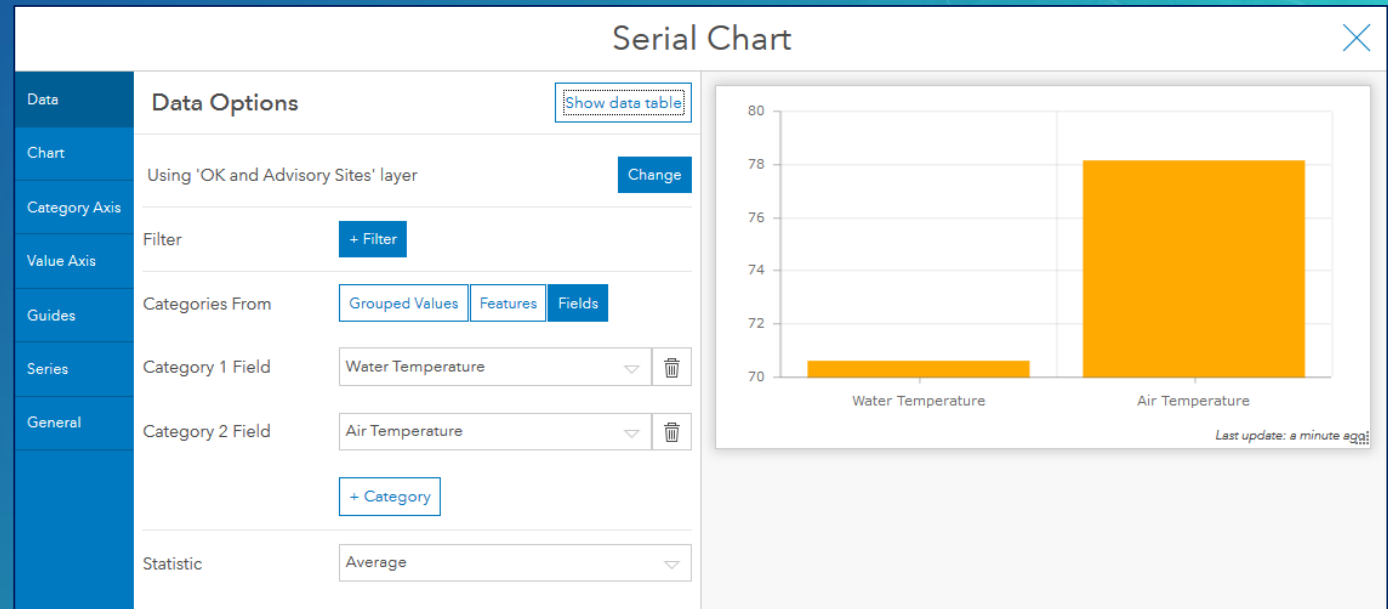


Categories: Fields

- Used for comparison of data in multiple fields (same units)
 - Examples: demographic data, different measures
- E.g., two temperature measures

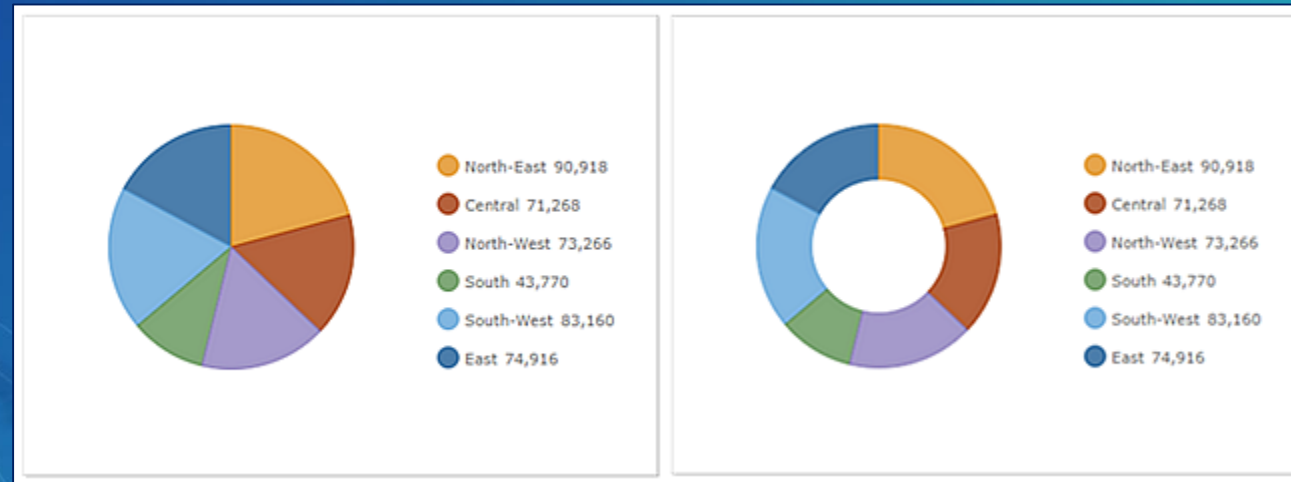
Rainfall	County	Water Temperature	Air Temperature	Cooler Temperature
0.84	Garrett	67.10	84.20	88.00
0.84	Garrett	69.60	84.40	91.80
0.84	Garrett	69.00	71.50	90.50
0.84	Garrett	70.40	86.60	90.30
0.84	Garrett	71.60	68.00	91.00
0.92	Garrett	72.20	78.40	90.40
0.92	Garrett	73.30	70.30	89.50
0.92	Garrett	72.60	74.50	88.50
0.92	Garrett	68.90	90.40	91.50

Showing 163 features



Pie Chart Element

- Circular chart divided into sections; each section is proportional to the quantity it represents
- Displays a single series of data points
- Used to show part-to-whole relationships or data composition
- Not meant to show comparisons between sections
- Option: donut chart representation



Pie Chart Properties

- Properties

- Title and description
- Format chart
 - Text color, hover text, labels, label offset
 - Inner radius, legend placement
 - Pie slices (categories)
- Data: Can apply filters, categorize
 - Apply statistics
 - Format dates
 - Sort data

The image displays three overlapping panels from a software interface, likely for a data visualization tool, showing various configuration options for a pie chart.

Data Options Panel:

- Data:** Data Options (with a "Show data table" button)
- Chart:** Using "OK and Advisory Sites" layer (with a "Change" button)
- Slices:** Filter
- General:**
 - Categories From
 - Category Field
 - Statistic
 - Sort By

Chart Options Panel:

- Data:** Chart Options
- Chart:** Text Color (with a color picker)
- Slices:** Hover Text (with a toggle switch)
- General:**
 - Labels (with a toggle switch)
 - Labels Offset (px): 20
 - Label Line Opacity (with a slider)
 - Start Angle (with a slider)
 - Inner Radius (%) (with a slider)
 - Legend Placement (with "Hide" and "Show" buttons)

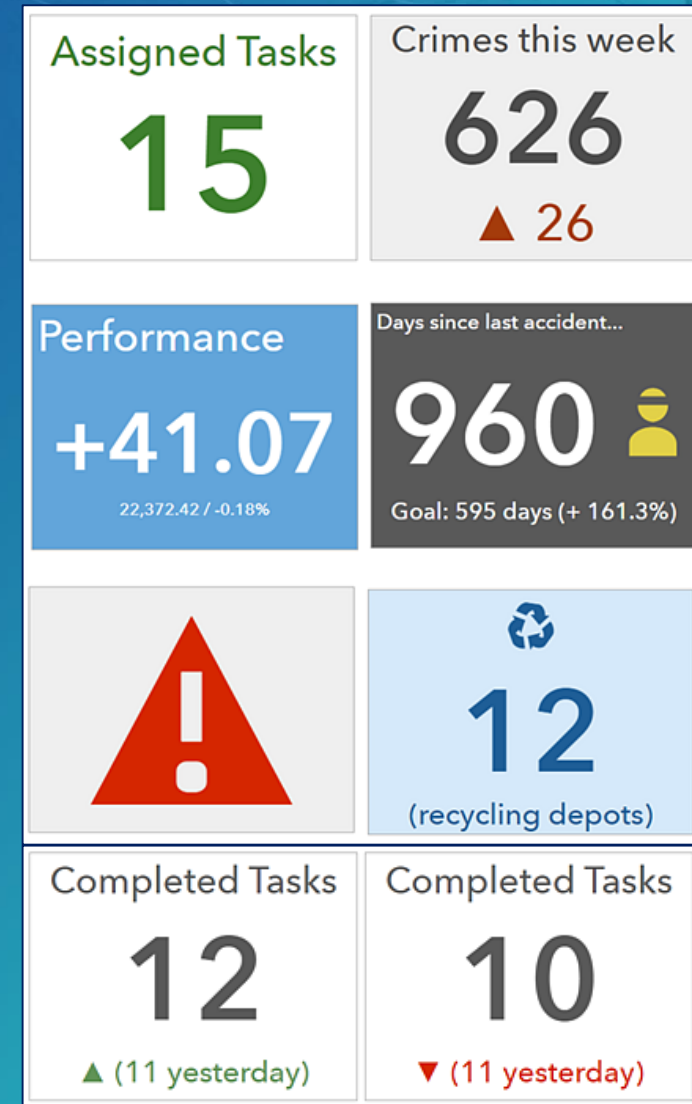
Slices Panel:

- Data:** Slices
- Chart:** Opacity (with a slider)
- General:**

Category	Color	Label	
Creek	Orange	Creek	🗑️
Lagoon	Yellow	Lagoon	🗑️
Lake	Light Green	Lake	🗑️
Marsh	Green	Marsh	🗑️
Mill Pond	Cyan	Mill Pond	🗑️
Pond	Blue	Pond	🗑️
Reservoir	Dark Blue	Reservoir	🗑️
Swamp	Purple	Swamp	🗑️
Null	Grey	Null	
Blank	Grey	Blank	
Undefined Categories			
+ Category			
Load Categories		Apply Colors	
Grouping (%)	Default		
Grouping Color	Grey		

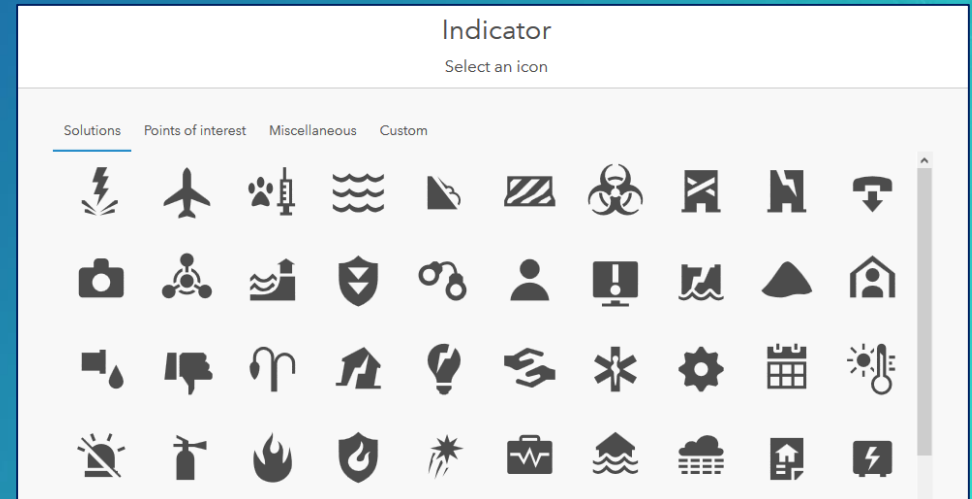
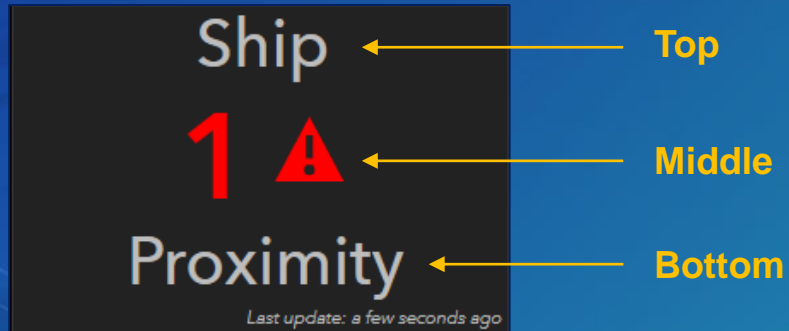
Indicator Element

- Card that can display
 - Feature count
 - Summary statistic → sum, avg, min, or max
 - Compare a computed value to a reference value
 - Based on a threshold
- Can apply filters
- Option to set conditional formatting
 - Appearance changes based on a condition
- Option to only display icon



Anatomy of an Indicator

- Each area is optional and can have text displayed
- HTML code is supported
- Middle section has icons (right or left)
 - Custom icons supported, use scalable vector graphics (SVGs)



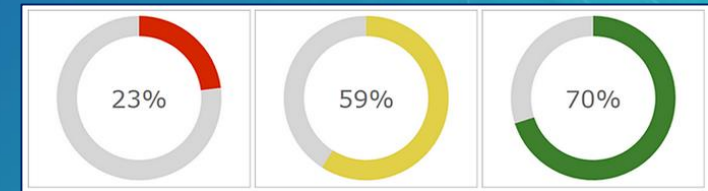
Gauge Element

- Show the value of a single metric; defined by minimum and maximum values
 - Value can be fixed or dynamic

- 2 styles:

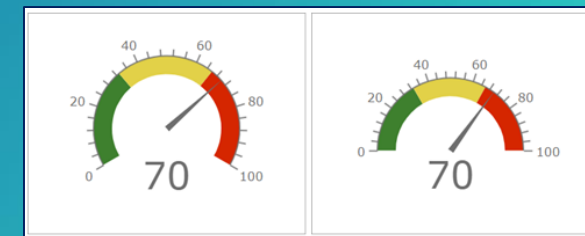
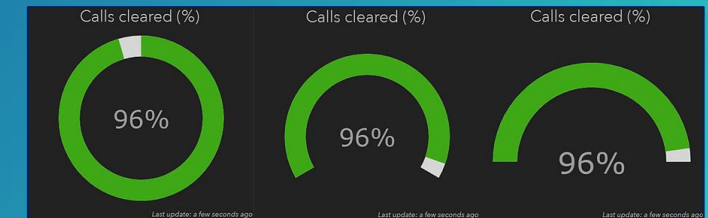
1. **Progress gauge**

- Convey a parameter is moving forward or backward
- Can define thresholds to show progression
- Rendered as circle, horseshoe, or half donut



2. **Meter gauge**

- Display the amount, level, or contents of a parameter
- Rendered as horseshoe or half donut



List Element

- Displays a collection of features or rows from a layer
- Field and formatting is based on the layer's pop-up configuration
- Can limit the number of features displayed
- Can apply filters and sorting

Data

List

General

List Options

Line Item Text

B *I* U A- **A-** | |

Format | Size | *Ix* | { } | Source

Sample ID: {STATIONNUM}
Date: {SAMPLEDATE}
Access: {ACCESSTYPE}

Line Item Icon
















None

Symbol

Selection Mode

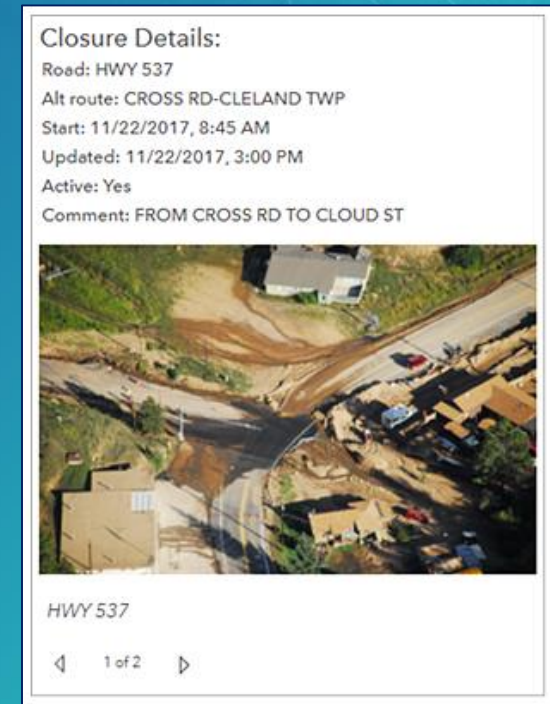
Single

Multiple

Individual Projects (Click to Zoom to Area)		
	La Paz Cibola Wash	Completed
	Pima County Wildfire Risk Mitigation	Completed
	Snowflake Reaches	Completed
	Maricopa County HMP	Completed
	Apache County Nutrioso Creek Flood Mitigation	Completed
	Town of Eagar Water Canyon	Completed
	La Paz Tributary B	Open
	Arizona GEO	Completed
	Mohave County Sunrise Vistas East Channel Improvements Project	Completed
	Santa Cruz County HMP	Open
	Yuma County HMP	Open
	Apache County HMP	Open
	Navajo County HMP	Completed
	Gila County HMP	Open
	Cochise County HMP	Open

Details Element

- Displays item specifics about features or rows from a layer
- Information based on the layer's pop-up information
 - Title, content, media, and attachments
- Supports filtering and sorting
- Can limit the number of features displayed
- Useful for interactive dashboards
 - Target element for actions
 - Set media refresh interval if images are updated



Rich Text Element

- Enables text content to display in the dashboard
 - Can help provide additional context
- Supports rich text elements
 - Text, web links, images, and videos
- HTML editor, WYSIWYG user experience

This dashboard shows locations of crimes, medical emergencies, traffic accidents, and locations of emergency response vehicles in real-time in Redlands, CA. For more information about dashboards, visit <http://doc.arcgis.com/en/operations-dashboard/>.



Dashboard Layout Options

- Elements can be positioned in any combination in a dashboard
 - Exceptions Header and Left Panel

- Elements can be stacked or grouped

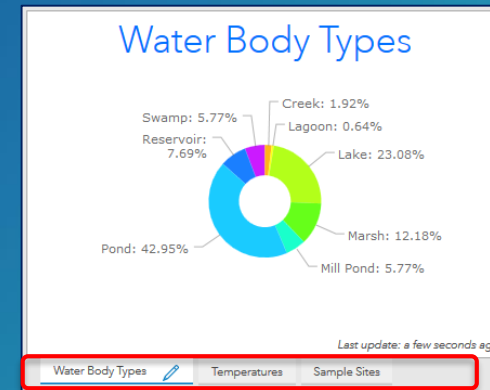
- **Stack elements**

- Position elements in same location, tab to switch between them

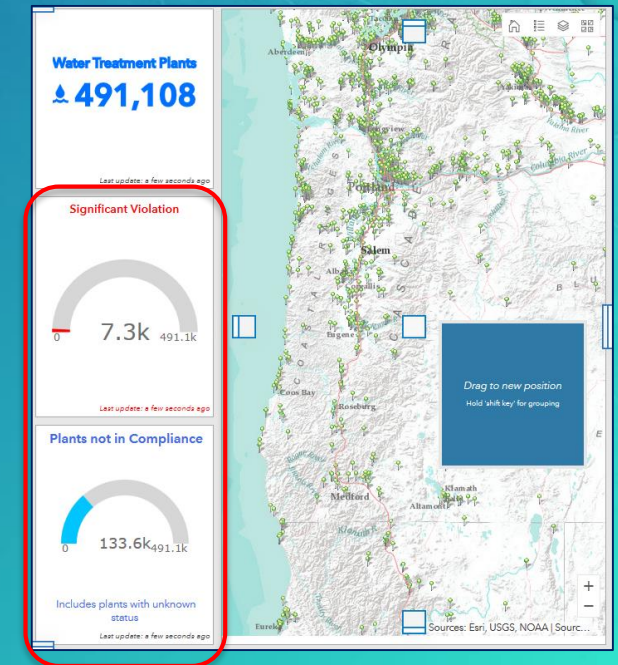
- **Group elements**

- Aggregate into a single unit
 - Hold 'shift key' to enable grouping

stack



group



Additional Considerations

Web Maps for Dashboards – Best Practices

- Set appropriate refresh intervals
- Exclude irrelevant data from operational layers
- Toggle operational layer visibility
- Set visible range
- Adjust pop-ups
- Use bookmarks
- Style your data
- Include labels for map layers
- Choose appropriate colors



Operations Dashboard | Format Numbers

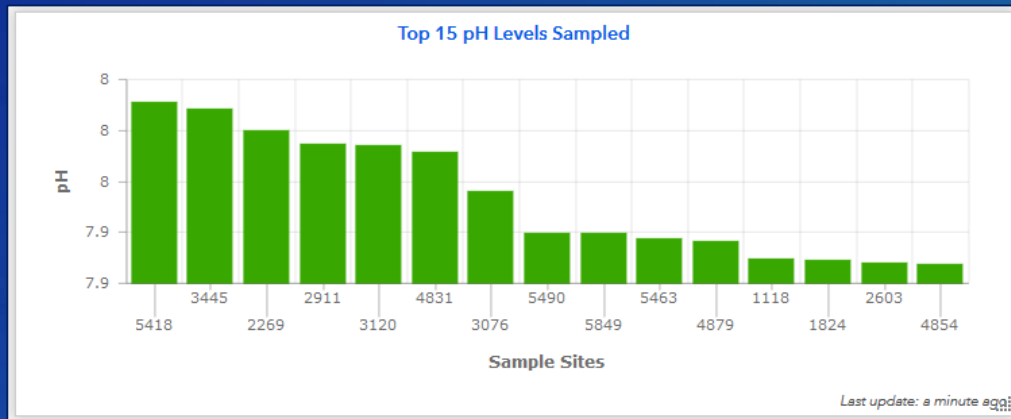
- Ops Dashboard attempts to display numbers in a locale-sensitive manner
 - Based on ArcGIS Online user profile language setting
 - If anonymous, uses web browser setting
- E.g., The number one million with two decimal places
 - *1,000,000.00 for Canadian and American users*
 - *1 000 000,00 for French users*
 - *1.000.000,00 for German users*
- If the default is not adequate, override with the Pattern setting property in the element
 - Help topic: [Format numbers](#)
- May want to format numbers in charts to ensure data is shown properly

Element configuration

Value	Prefix	Pattern
	<input checked="" type="checkbox"/>	Default

Format Numbers Example

- E.g., Serial Chart > Value Axis

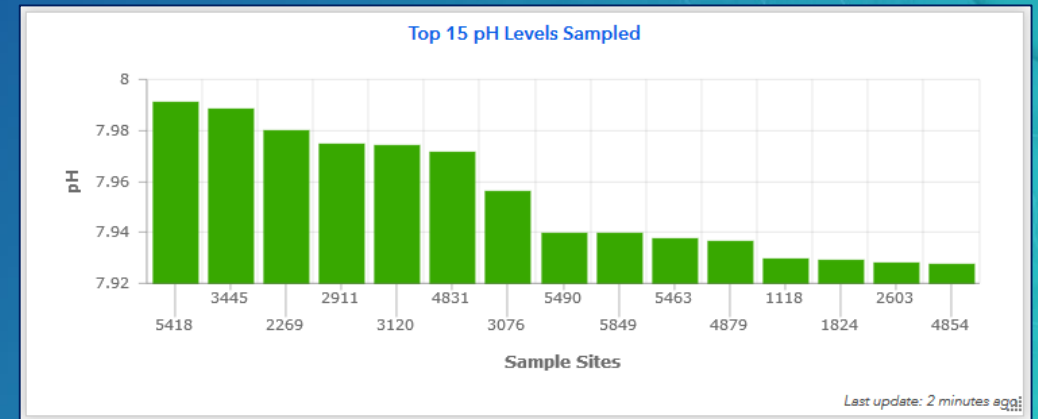


Formatting

Prefix

Pattern

☒ #,###.##



Formatting

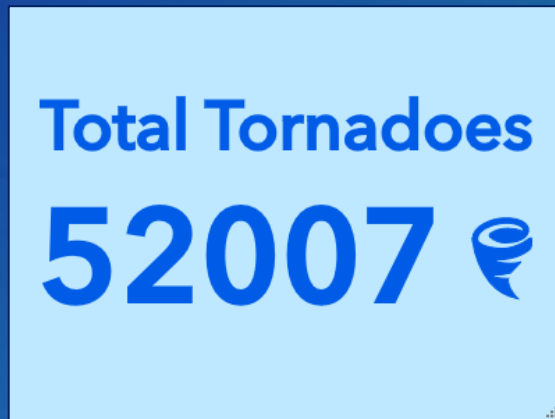
Prefix

Pattern

☒ #,###.##

Operations Dashboard | Unit Prefixing

- Another option to format large numbers in dashboard, make them easier to interpret
- Used in Indicator elements
- Ops Dashboard uses standard metric prefix symbols

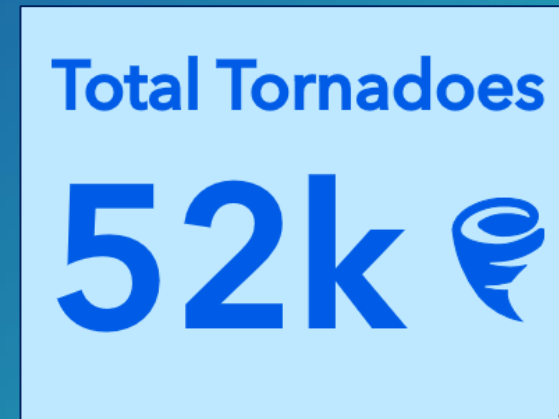


Value

Prefix ☐

Pattern

This form is a white rectangular control panel. It contains three elements: a 'Value' label, a 'Prefix' label with an unchecked toggle switch, and a 'Pattern' label with a text input field containing the default pattern '#.##'.



Value

Prefix ☒

Pattern

This form is a white rectangular control panel, identical to the one on the left. It contains three elements: a 'Value' label, a 'Prefix' label with a checked toggle switch, and a 'Pattern' label with a text input field containing the default pattern '#.##'.

Operations Dashboard | Format Dates

- Time series data
 - Recommend use date field type, but string and numeric are also supported
 - Ops Dashboard can apply date patterns to format your data for visualization
 - Help topic: [Format dates](#)

Pattern	Result
M/d/yy	10/1/17
MMMM d, yyyy	October 1, 2017
d MMM yy	1 Oct 17
EEEE, MMMM d, yyyy	Sunday, October 1, 2017
yyyy	2017
HH:mm:ss	00:00:00

Operations Dashboard | Parse Dates

- For time data stored as string or numeric field types, Ops Dashboard enables you to select the time unit value to display
- Parse data is a property available in the Serial Chart element > Data tab
- Help topic: [Parse dates](#)

Tab	Configuration
Data	Data Options Show data table
Chart	Using 'OK and Advisory Sites' layer Change
Category Axis	Filter + Filter
Value Axis	Categories From: Grouped Values Features Fields
Guides	Category Field: Station Number
Series	Parse Dates: <input checked="" type="checkbox"/>
General	Parsing Pattern: yyyy
	Minimum Period: Second (dropdown menu open showing: Second, Minute, Hour, Day, Month)
	Series 1 Field: Station Number
	Maximum Categories: Grouped Values

Dashboard Interactivity

Dashboard Interactivity

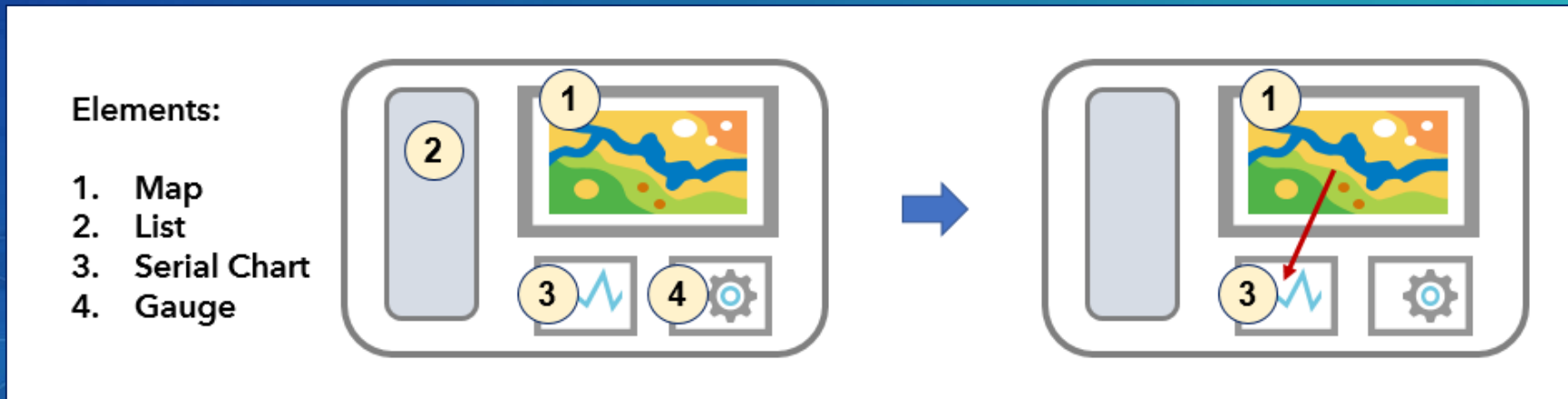
- Enables “deeper dive” with dashboard data
- Dashboard elements can be associated with one another
- Interact with one element, triggers a response in another element(s)



- Many different interactions possible, support different workflows

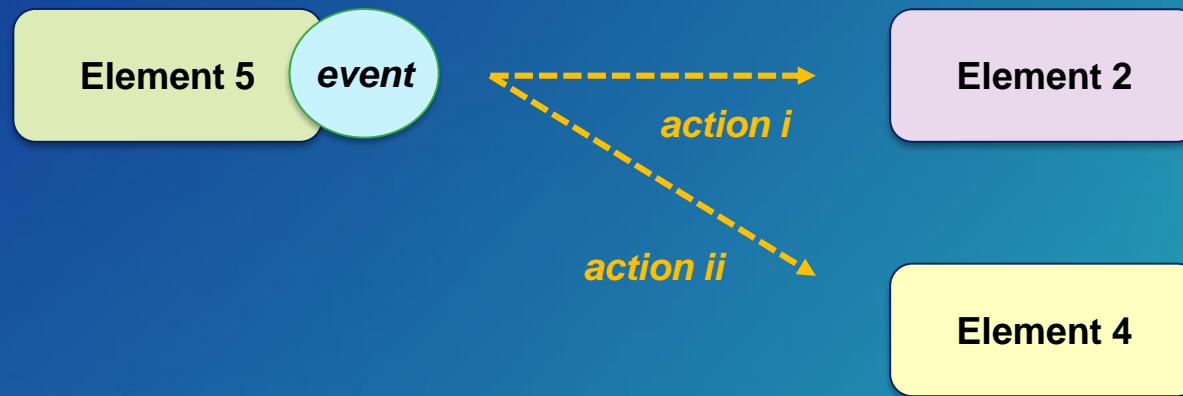
Interactivity Example 1

- An event can trigger an action
- Ex: Select and highlight features in the map → serial chart is filtered to selection set



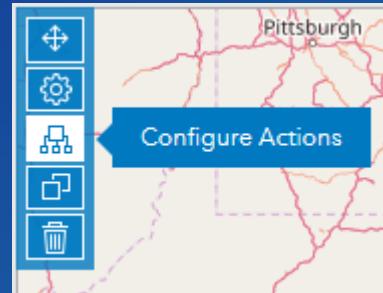
Interactivity Example 2

- An event can trigger multiple actions
- Ex: Click a selector (in left panel) to filter data → list and gauge are filtered to selected feature

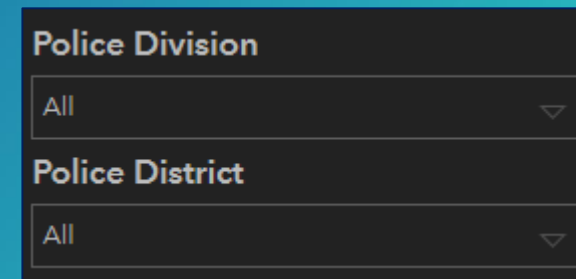
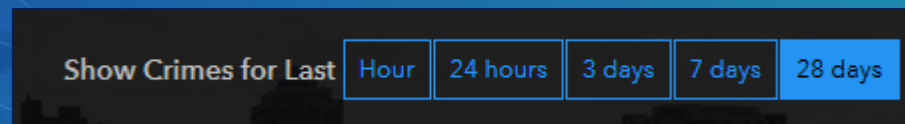


Dashboard Interactivity – 2 Concepts

1. **Action** → When an event is applied to a source element, a target element responds
 - Possible actions: Filter, Flash, Pan, Zoom, and Set spatial extent



2. **Selector** → User interface (UI) control on the *Header* or *Left Panel* that triggers an action



Dashboard Interactivity – Events & Actions



- Source elements

- Map
 - *Map extent change*
 - *Selection in map layers*
- Header, Left Panel
 - *Selectors*
- List
 - *Selection*

- Possible actions

- *Filter* data
- *Flash* a location
- *Zoom* to a feature
- *Pan* to a feature
- *Set spatial extent*
 - In cases with a 2nd map in dashboard

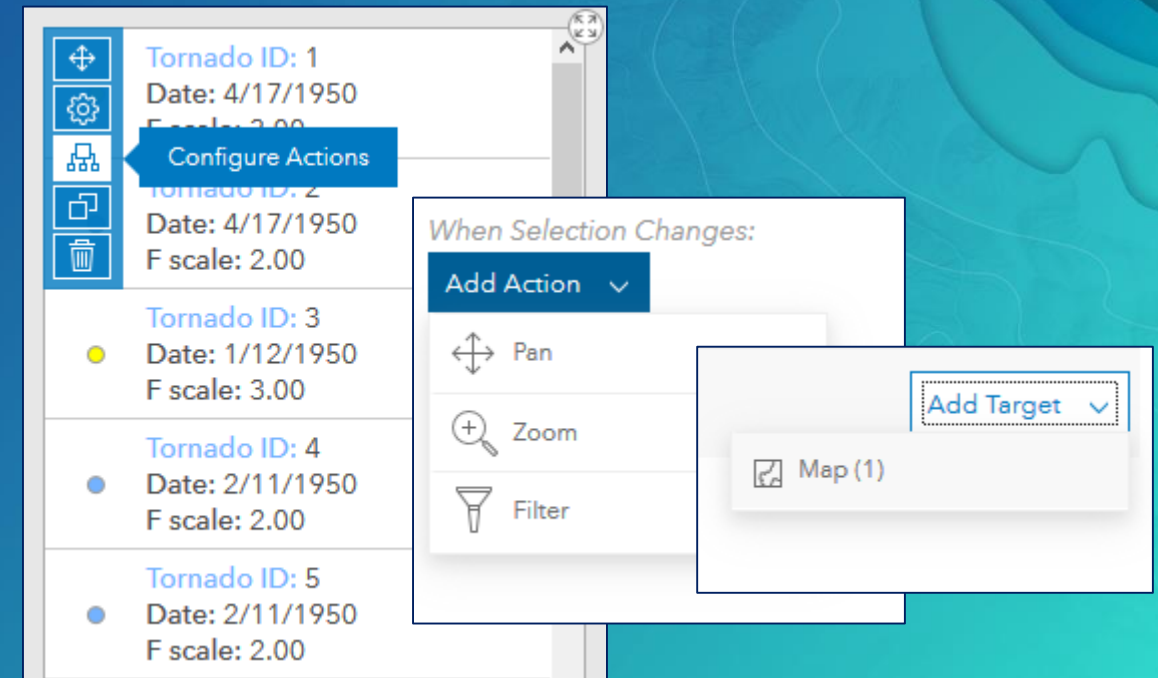
Dashboard Interactivity – Events & Actions

- Possible configurations

Element	Action Source	Action Target
Map	•	•
Map's operational layer	•	•
Serial chart		•
Pie chart		•
Indicator		•
Gauge		•
List	•	•
Details		•
Category selector	•	•
Number selector	•	•
Date selector	•	

Workflow: Configure Action

- Hover over element > Configure Action
- Add Action
- Select target element
- Set additional properties if required



Map Element Interactivity

- It is possible to enable interactivity when
 - Map extent changes
 - Selection in map layer(s)

Map Actions

SourceMap (1)

When Map Extent Changes:

FilterAdd Target

Pie Chart (1)

Map Actions

SourceMaryland Counties

When Selection Changes:

FilterAdd Target

Serial Chart (1)

MethodFieldsSpatial

Source Field

NAMEstring

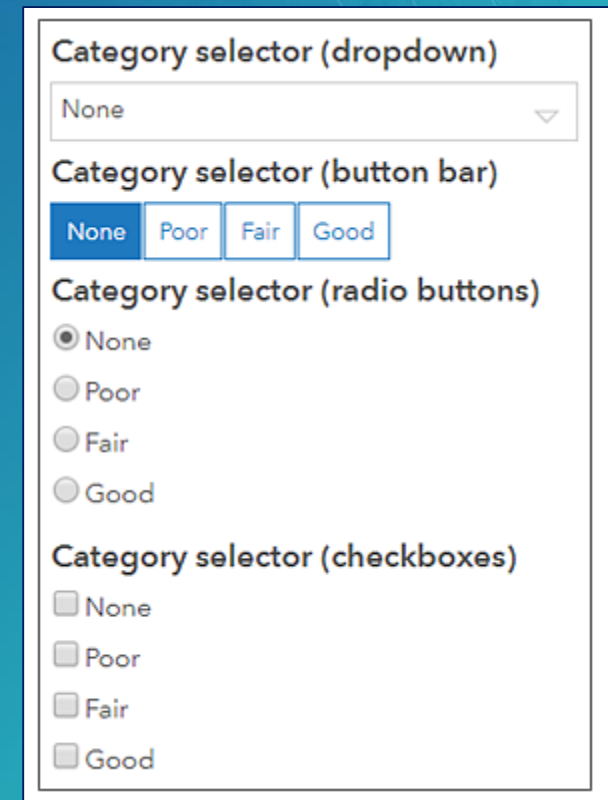
Target Field

Countystring

Add Action

Category Selector

- Its values can be from a list of values, features, or summary statistics
- Can be rendered as:
 - Dropdown, button bar, list of radio buttons, and checkboxes
- Single or multiple selection options

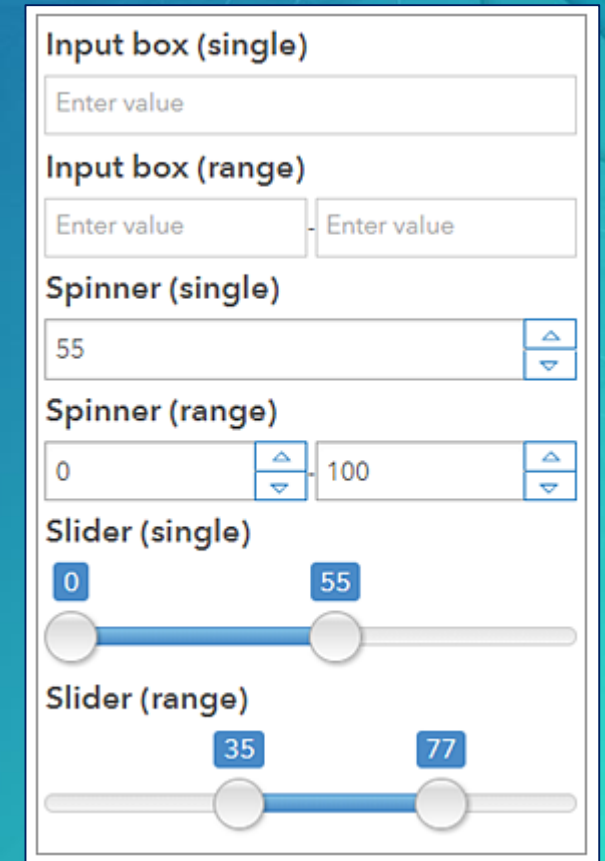


The image displays a vertical list of four category selector UI components, each with a title and a set of options:

- Category selector (dropdown)**: A dropdown menu with "None" selected and a downward arrow.
- Category selector (button bar)**: A horizontal row of four buttons: "None" (highlighted in blue), "Poor", "Fair", and "Good".
- Category selector (radio buttons)**: A vertical list of four radio buttons, with "None" selected (indicated by a filled circle).
- Category selector (checkboxes)**: A vertical list of four checkboxes, all of which are currently unchecked.

Numeric Selector

- Its values can be a single fixed value or numeric range
- Can be rendered as:
 - Input box, spinner, and slider
- For spinner and slider displays, upper and lower limits required
 - Can also set increment value



The image displays a collection of six numeric selector UI controls arranged vertically:

- Input box (single):** A single text input field with the placeholder text "Enter value".
- Input box (range):** Two text input fields side-by-side, both with the placeholder text "Enter value".
- Spinner (single):** A text input field containing the value "55", with up and down arrow buttons on the right.
- Spinner (range):** Two text input fields side-by-side. The left field contains "0" and the right field contains "100", both with up and down arrow buttons.
- Slider (single):** A horizontal slider bar with a range from 0 to 55. The value 55 is indicated by a blue box above the slider handle.
- Slider (range):** A horizontal slider bar with a range from 35 to 77. The values 35 and 77 are indicated by blue boxes above the slider handles.

Date Selector

- Its values can be configured to show pre-defined data & time, a date & time picker, or both
- For pre-defined date & time can be rendered as:
 - Dropdown, button bar, and list of radio buttons
- For date & time picker, single or multiple selection options
 - Also support default values
- Relative date & times are supported
 - Help topic: [Date-based filter conditions](#)

Defined (dropdown)

None

Defined (radio buttons)

☒ None

☐ Last 15 mins

☐ Last 30 mins

☐ Last hour

☐ Last 6 hours

Defined (button bar)

None 15 mins 30 mins 1 hr 6 hrs

Date picker (single)

12/5/2017

Date picker (range)

12/5/2017

-

12/15/2017

End Notes

Designing Dashboards

- Consider the audience for the information product
- Dashboard should help enable “at-a-glance” decision making
- Interactive or unattended display
- Design and implement visualizations cautiously
 - Avoid the “kitchen sink” approach
 - Built specific focused apps
- Share with others

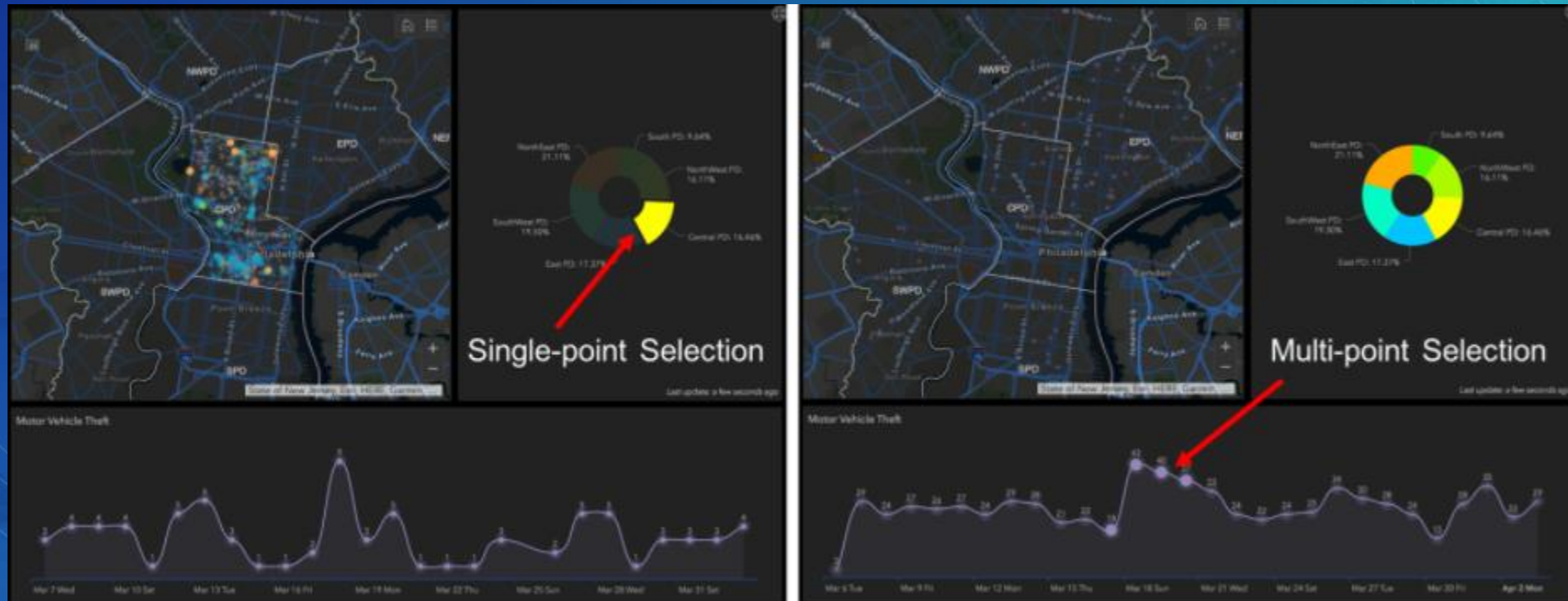


Best Practices

- Set appropriate refresh intervals
- Exclude irrelevant data
- Configure layer visibility
- Style your data
 - Leverage the latest webmap capabilities: heat map, stream layers, vector basemaps, Arcade expressions
- Adjust pop-up fields
- Bookmark areas of interest
- Choose appropriate colors

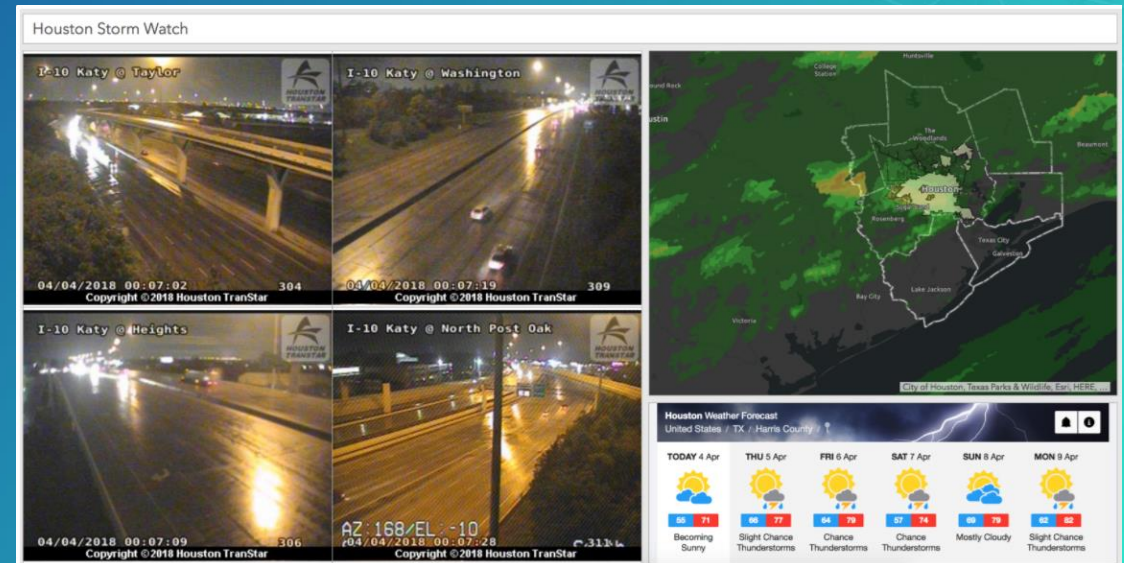
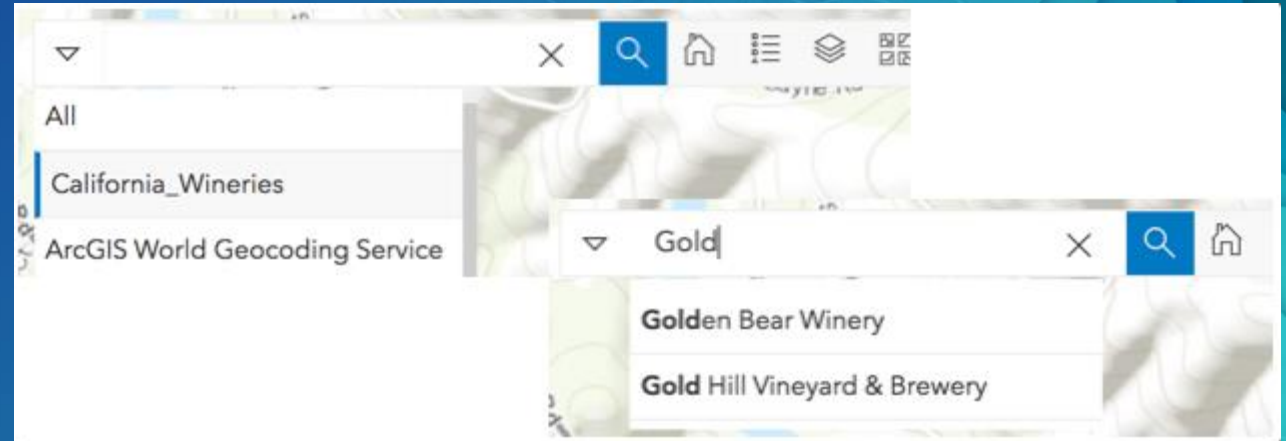
What's New in Operations Dashboard (April 2018)

- Selection on pie and serial charts: Select single or multi-data points to trigger actions on other elements



What's New in Operations Dashboard (April 2018)

- Search map tool: New search capability to find locations or features
- Embedded Content
 - Static: Documents, Images, Video (URL)
 - Features: Each Feature's attribute information can be used to dynamically construct at runtime For Ex. Target of a Map Selection action to display content from cameras

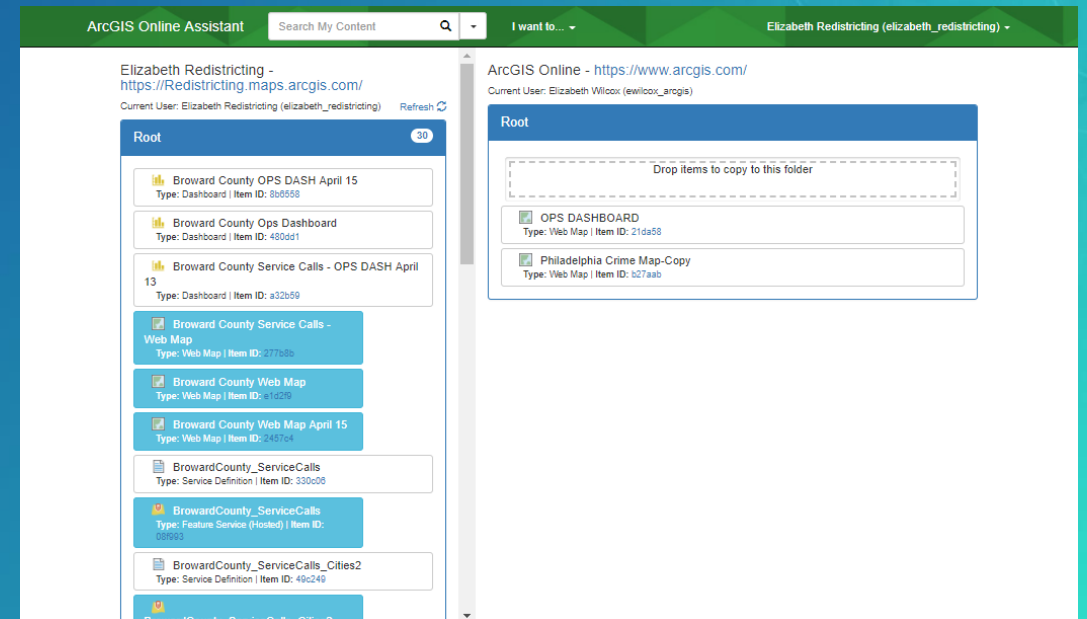
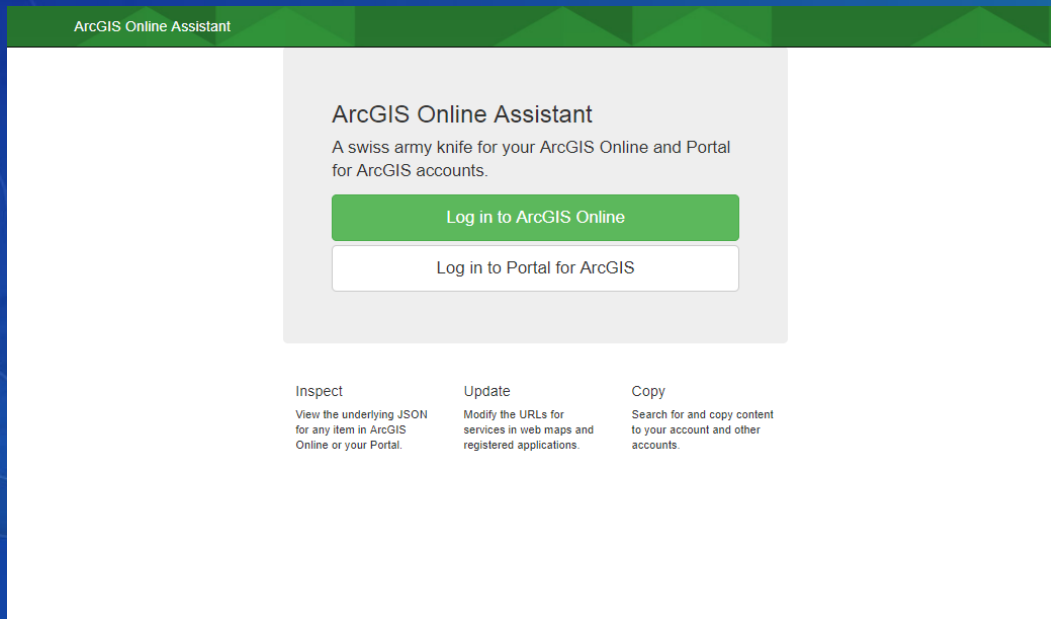


What's New in Operations Dashboard (April 2018)

- No Data Label: Provide text to fill empty space
- New SVG icons: Additional icons and supported on Header element
- Scalebar: Add to Map element

ArcGIS Online Assistant

- Separate application that works with ArcGIS Online and Portal accounts to:
 - Inspect – View the underlying JSON for any item in your portal
 - Update – modify URLs for web maps and web apps
 - Copy – copy content from one account to another



How to Copy Operations Dashboards?

1. Sign in to your ArcGIS Online/Portal account and go to the Operations Dashboard Launcher (<https://yourOrg.maps.arcgis.com/apps/opsdashboard/index.html#/home>)
2. Click the Create Dashboard button
3. Copy the item ID of the dashboard you'd like to save a copy of
4. For example:
<https://www.arcgis.com/apps/opsdashboard/index.html#/9ef296f66f724c36bc9f01fc69768ed>
5. Add the ?id=itemID to the Create Dashboard URL and press ENTER
The page will load with the Title, Tags, and Summary already filled out
6. Click Create Dashboard

How to Copy Operations Dashboards?

← → ↻ Secure | https://www.arcgis.com/apps/opsdashboard/index.html#/new

Create new dashboard

Title*

Cannot be blank

Tags

Summary

Create Dashboard Cancel

Create new dashboard

from: Philadelphia Crime Dashboard - Interactive

Title*

Philadelphia Crime Dashboard - Interactive

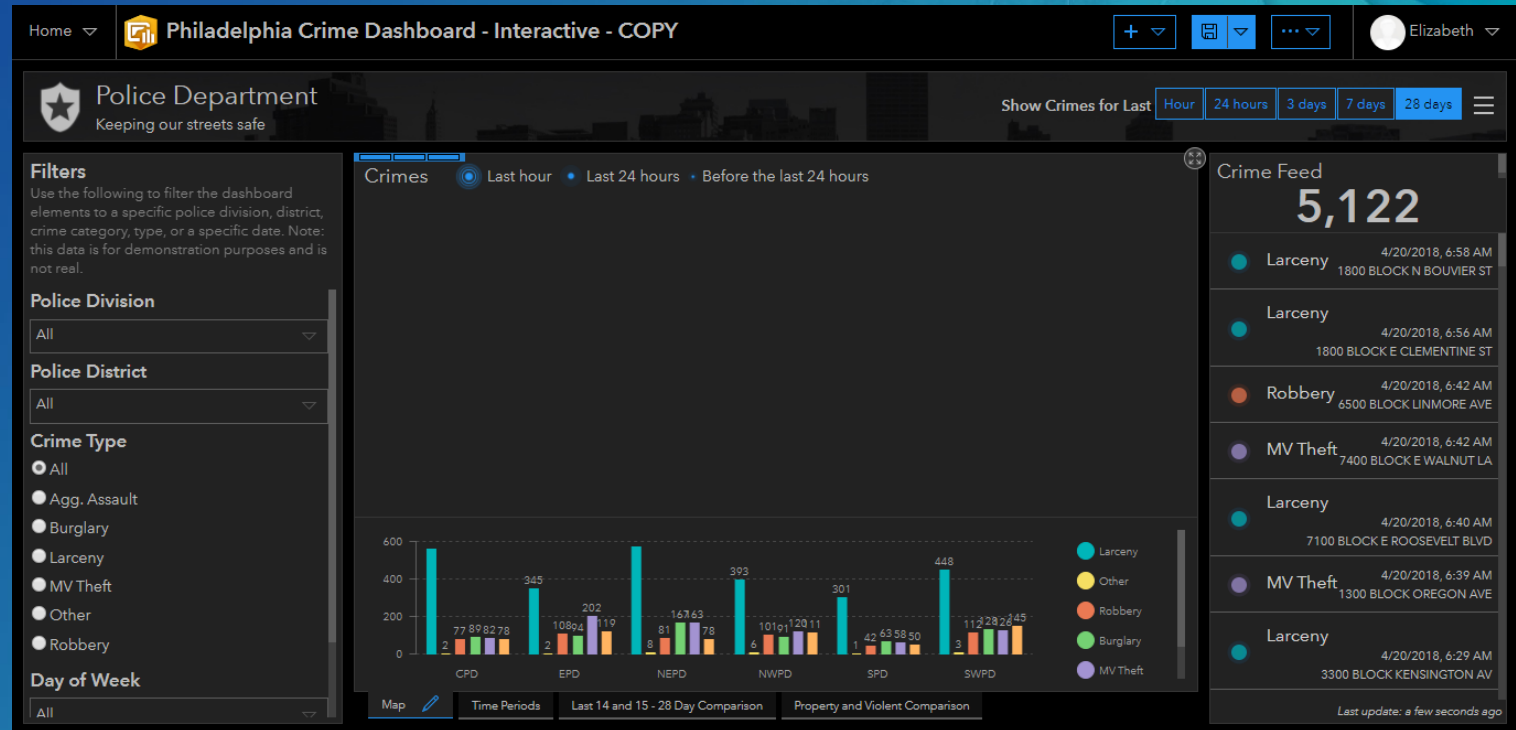
Tags

Philadelphia | crime

Summary

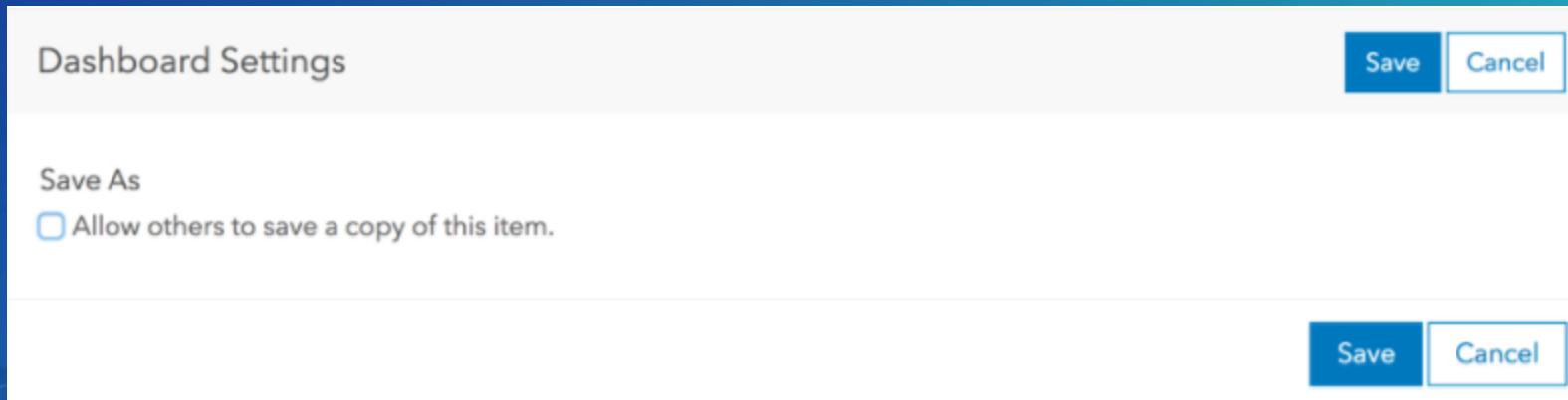
This dashboard provides an interactive experience to monitor where crimes occur, when they happen, and what types are prevalent for at-a-glance decision making.

Create Dashboard Cancel



How to prevent copying of your Operations Dashboards?

1. Go to the Item Details page in ArcGIS Online
2. Click the Settings tab
3. Uncheck “Allow others to save a copy of this item”



Dashboard Settings

Save Cancel

Save As

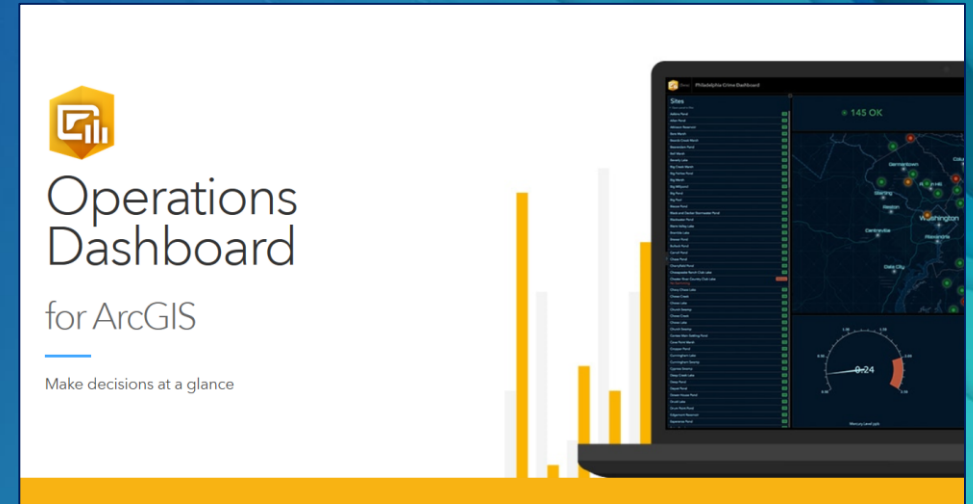
☒ Allow others to save a copy of this item.

Save Cancel

⚡ "Error: The item is copy protected."

Additional Resources

- Operations Dashboard [help documentation](#)
- GeoNet forum: [Operations Dashboard for ArcGIS](#)
- Blogs
 - [Some Example Operations Dashboard for ArcGIS Apps & Resources](#)
 - Esri UK blog - [Learn about: Operations Dashboard](#)
- Esri Training webinar
 - [Real-Time Decision Making with Operations Dashboard for ArcGIS](#)





esri

THE
SCIENCE
OF
WHERE