

ArcGIS Maps SDK for JavaScript: Better UX with Pop-ups

Lauren Ballantyne & Lauren Boyd

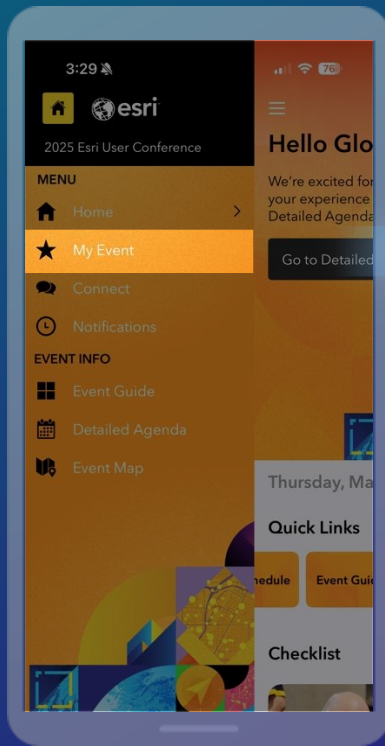
```
Map map = new Map(BasemapStyle.ArcGISNavigation);  
  
map.InitialViewpoint = new Viewpoint(40.72,  
-73.995,  
72000);  
  
mapView.Map = map;
```

```
class MainActivity : AppCompatActivity() {  
    override fun onCreate(savedInstanceState: Bundle?) {  
        super.onCreate(savedInstanceState)  
        setContentView(  
            SampleAppTheme {  
  
                val map = ArcGISNavigationMap(NavigationMapViewOptions {  
  
                    map.InitialViewpoint = Viewpoint(40.72,  
-73.995,  
72000.0
```

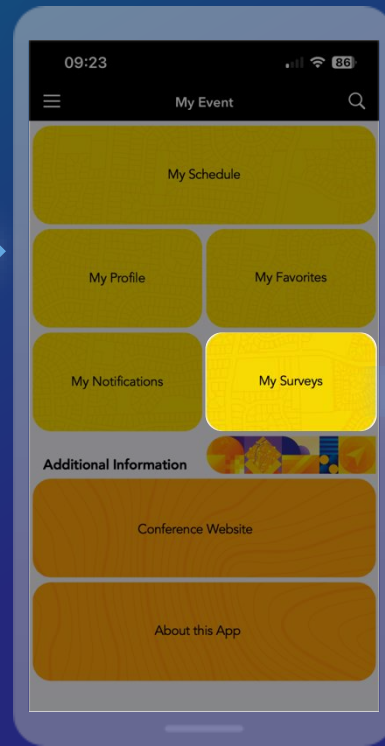
**DEV &
TECH**

Please share your feedback in the app

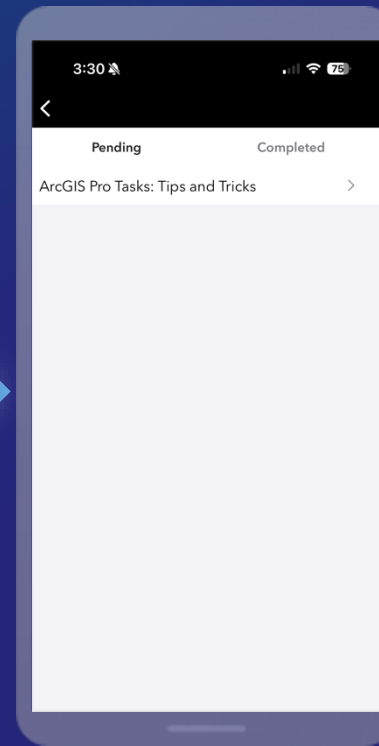
Select "My Event" in the event app main menu



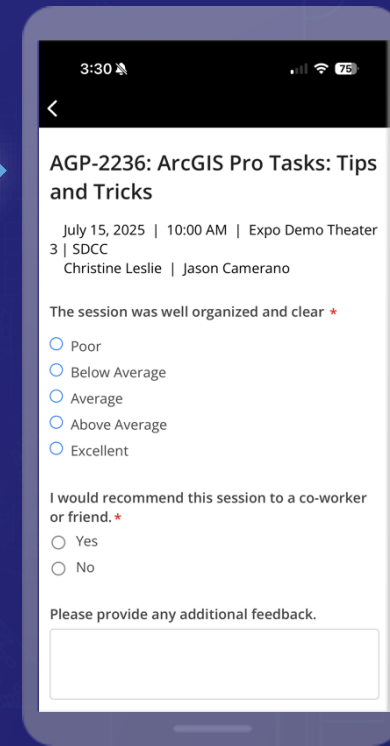
Select "My Surveys"



Select the desired survey



Complete the survey



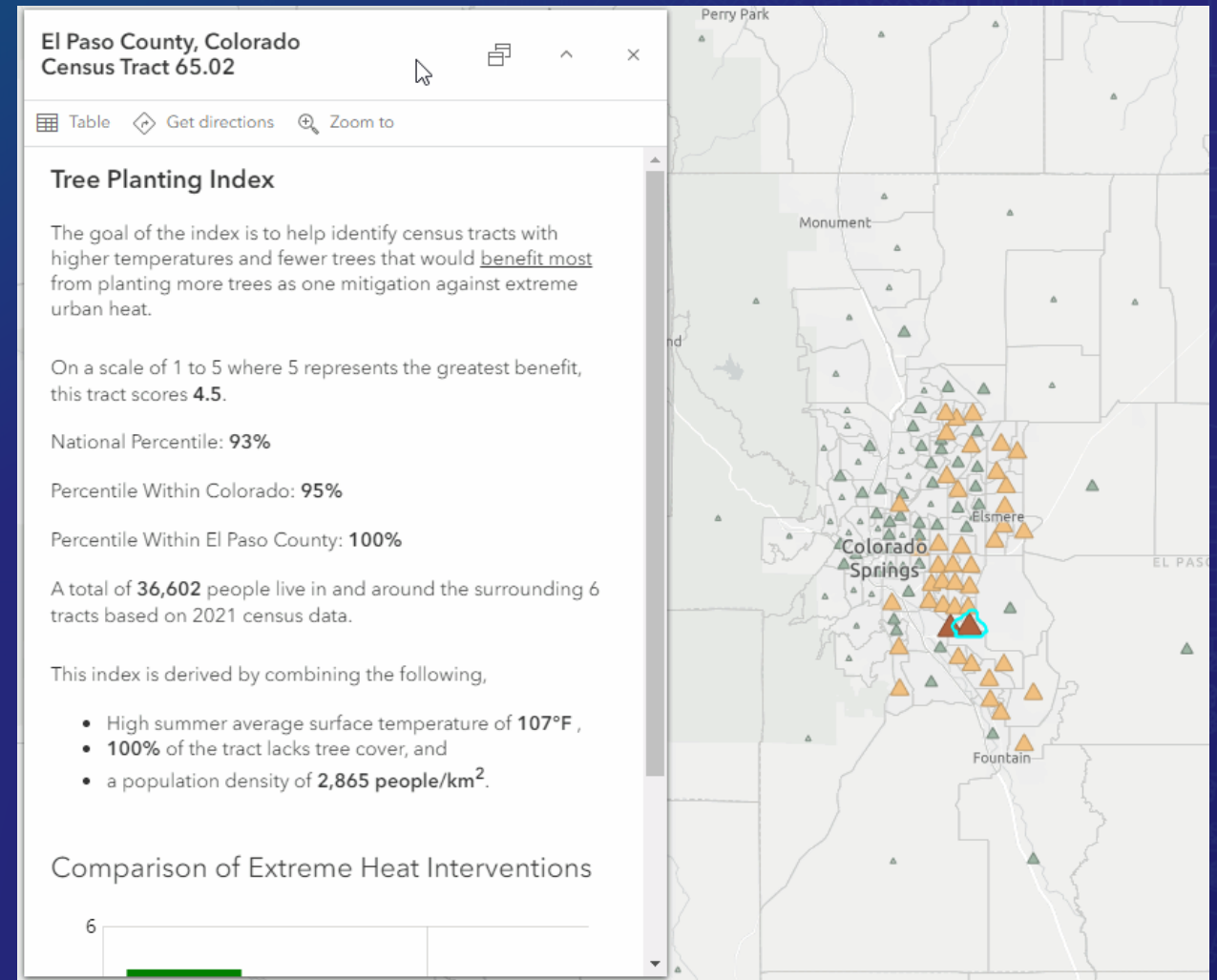
Agenda

- Pop-ups – the key to great maps
- Overview of content elements
- Arcade
- What's new?
- Demos – Map Viewer
- Pop-ups from a JS Maps SDK perspective
- Demos – JS Maps SDK
- What's next?
- Questions

Pop-ups

What are they and why are they so important?

- Customizable
- Interactive
- Cross-platform feature
- Available for a variety of layer types



Pop-up elements

- Text (rich text & HTML)
- Fields list
- Attachments
- Media (charts and images)
- Related records
- Arcade
- *Utility network associations

Lake Ellesmere - mid-lake

Table Zoom to

Site: SQ30954	
Waterbody category	→ Lakes
Altitude (meters)	→ 2.00
Trophic state (2004 - 2006)	→ Hypertrophic
Trophic state (2010)	→ Hypertrophic
Number of samples collected	→ 327

Sample date range

Water samples from Lake Ellesmere were collected from **November 28, 1983** to **October 23, 2017** to determine the trophic state of the waterbody over time.

Individual results

To see the results from individual samples collected from Lake Ellesmere, click the link [here](#).

Census Tract 589 in Queens County, New York

Table Zoom to

The most popular commute alternative in this area is:

Subway or Elevated Rail

As a point of comparison, 15.7% ($\pm 5.1\%$) of this area's 2,547 workers (± 344) drove alone to work, which is 401 lone drivers (± 140).

Commute Alternative	Number of Workers
Subway or Elevated Rail	~1,400
Other Alternatives	< 500

Station: NWSEVRG1 (NOAA)

Get directions Zoom to

Status	MODERATE FLOOD
Height	14.23 FEET (4.34 METERS)
Flow	61800 ft ³ /s (1749.98 m ³ /s)

AED Location: York

Edit Get directions Zoom to

AED_Instructions.txt

Bird species observations

Edit Get directions Zoom to

Canada Goose

Below are the two most recent behavior comments relating to Canada Goose observation. Click "Show all" to see all relating comments.

Canada Goose behavior comments
July 20, 2022

Arcade

What is it?

- ArcGIS's cross-platform expression language
- Create expressions to calculate new values on the fly
 - Use values from your data
 - Leverage geometries to discover spatial patterns
- Access data from other layers via FeatureSets
- What Arcade is not:
 - A language for building apps

Arcade in pop-ups

- Two ways to use Arcade in pop-ups

1. Attribute expressions



2. Arcade elements



Pop-ups

Enable pop-ups

Options

Attribute expressions

```
1 /*
2 Open the Suggestions tab and choose a template to get started creating different content types for
3 To learn more about using Arcade to create pop-up content visit:
4 https://developers.arcgis.com/arcade/guide/profiles/#popup-element
5 */
6
7 return {
8   type : 'text',
9   text : 'place your text or html here' //this property supports html tags
10 }
```

Suggestions

Templates

Chart

Fields list

Rich text

Profile variables

Functions

Suggestions

Help

Collapse

Arcade assistant

The screenshot displays the 'New expression' window in the software. On the left, a code editor contains the following text:

```
1  /*
2  Open the Suggestions tab and choose a template to get started creating differ
3  To learn more about using Arcade to create pop-up content visit:
4  https://developers.arcgis.com/arcade/guide/profiles/#popup-element
5  */
6
7  return {
8    type : 'text',
9    text : 'place your text or html here' //this property supports html tags
10 }
```

On the right, an 'Arcade assistant' dialog box is open, featuring a 'Beta' label, an information icon, and a close button. The dialog contains the following text:

Welcome to the new assistant experience

Before you get started be aware:

- AI generated code may occasionally be incorrect or biased. Review carefully.
- Read the Arcade Assistant (beta) [help topic](#) to get started and learn details on security, privacy and limitations.

At the bottom of the dialog are 'Exit' and 'Proceed' buttons. At the bottom right of the main window are 'Cancel' and 'Done' buttons.

Arcade assistant - Learn more!

Map Viewer: Extending the Web Map with **Arcade** – with Lisa Berry & Taylor McNeil

- March 10th @ 5:30 PM (pacific time)

What's new since we last saw you?

- Attachment filtering
- Tile layer pop-up support
- Arcade support for imagery layers
- Field formatting
- Popup component (Beta)
- Text area inputs for titles and descriptions

Field formatting

fieldConfiguration

- Layer-level formatting object
- Follow internationalization standards
- Improved locale support
- More format options
- Opportunity to grow
- Backwards compatibility

The image shows two overlapping windows from a software application. The background window is titled 'Fields' and contains a search bar and a list of fields. The foreground window is titled 'Manage field' and is used for configuring a specific field.

Manage field

Display name: Brightness T31 (K)

Decimal places: Minimum 1, Maximum 2

Thousand separator: Use locale preference

Field information: [dropdown]

Done

Fields

Field Name	Format	Unit
<input checked="" type="checkbox"/> Brightness T31 (K) {BRIGHT_T31}		123
<input type="checkbox"/> Confidence (%) {CONFIDENCE}		int
<input type="checkbox"/> Fire Radiative Power (MW) {FRP}		123
Hours since Acquisition		
<input type="checkbox"/> Date/Time {HOURS_OLD}		int
Relative Days since		
<input type="checkbox"/> Acquisition Date {DAY_OF_ACQ}		int
<input type="checkbox"/> Satellite (Aqua or Terra) {SATELLITE}		abc
<input type="checkbox"/> Scan Resolution		123

Pop-ups & Map Viewer

Lauren Ballantyne



Going beyond Map Viewer

- Pros of Map Viewer
 - Easy UI + Arcade editor
 - No coding
 - Configuration sticks with web map and layer items
- Pros of the JS Maps SDK
 - Customize use case per custom application
 - More control over pop-up UI

Pop-ups & JS Maps SDK

Lauren Boyd



Popup Component (beta)

Since version 4.34

```
<arcgis-map id="06ca49d0ddb447e7817cfc343ca30df9">  
  <arcgis-popup slot="popup"></arcgis-popup>  
</arcgis-map>
```

Popup Component (beta)

Included in view components by default at 5.0

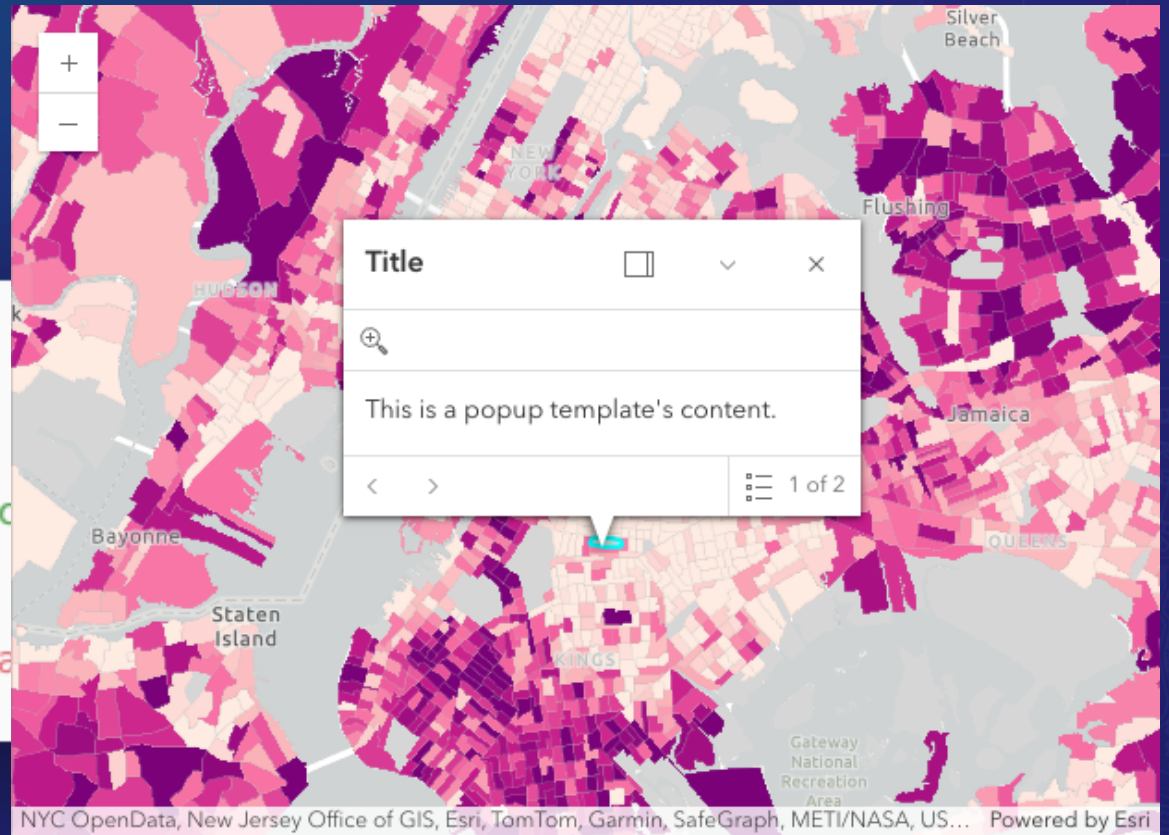
- New opt-in `popup-component-enabled` attribute
- New `popupElement` property to access default popup component

```
<arcgis-map id="06ca49d0ddb447e7817cfc343ca30df9" popup-component-enabled></arcgis-map>
<script type="module">
  const viewElement = document.querySelector("arcgis-map");
  await viewElement.viewOnReady();
  // Get a reference to the default popup component
  viewElement.popupElement.dockEnabled = true;
  viewElement.popupElement.dockOptions = {
    breakpoint: false
  };
</script>
```

PopupTemplate

- Formats and defines the pop-up content
- Set defaultPopupTemplateEnabled

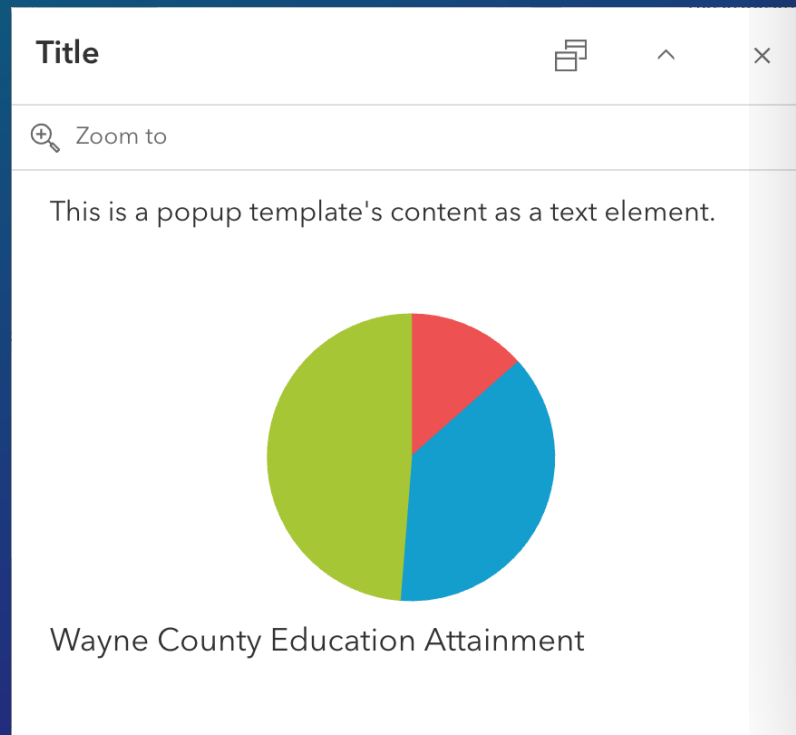
```
1 const popupTemplate = {  
2   // autocasts as new PopupTemplate()  
3   title: "Title",  
4   content: "This is a popup template's content",  
5 };  
6  
7 featureLayer.popupTemplate = popupTemplate
```



PopupTemplate

Content

- String, function, promise, or array of elements



```
1 const popupTemplate = new PopupTemplate({
2   title: 'Title',
3   content: [
4     {
5       type: 'text',
6       text: "This is a popup template's content as a text element.",
7     },
8     {
9       type: 'media',
10      mediaInfos: [
11        {
12          title: '{COUNTY} County Education Attainment',
13          type: 'pie-chart',
14          value: {
15            fields: ['SOMEHS_CY', 'HSGRAD_CY', 'CollegeEducated'],
16          },
17        },
18      ],
19    },
20  ],
21 });
22 featureLayer.popupTemplate = popupTemplate
23
```

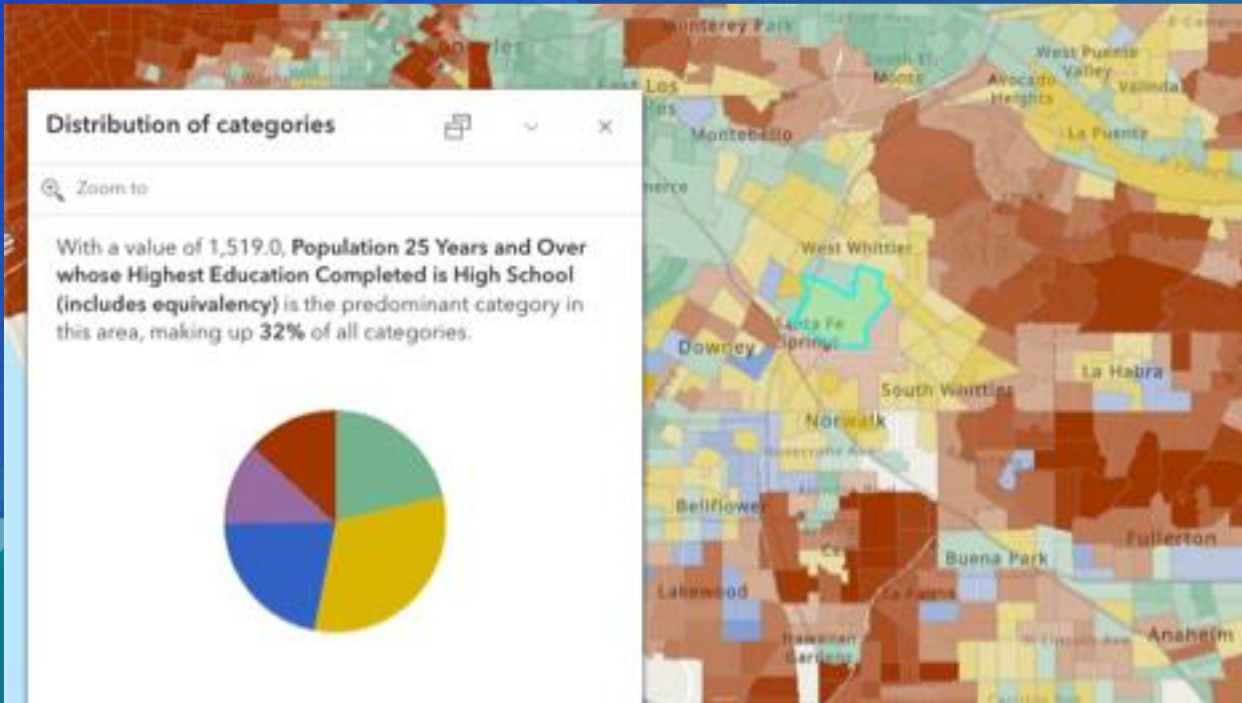
Content elements

- Configured on individual layers' popupTemplate

Element	JS Maps SDK Class
Text	TextContent
Fields List	FieldsContent
Attachments	AttachmentContent
Media (charts, images)	MediaContent
Relationship browser	RelationshipContent
Arcade elements	ExpressionContent
Associations	UtilityNetworkAssociationsContent (beta)

Configure pop-ups with JS Maps SDK

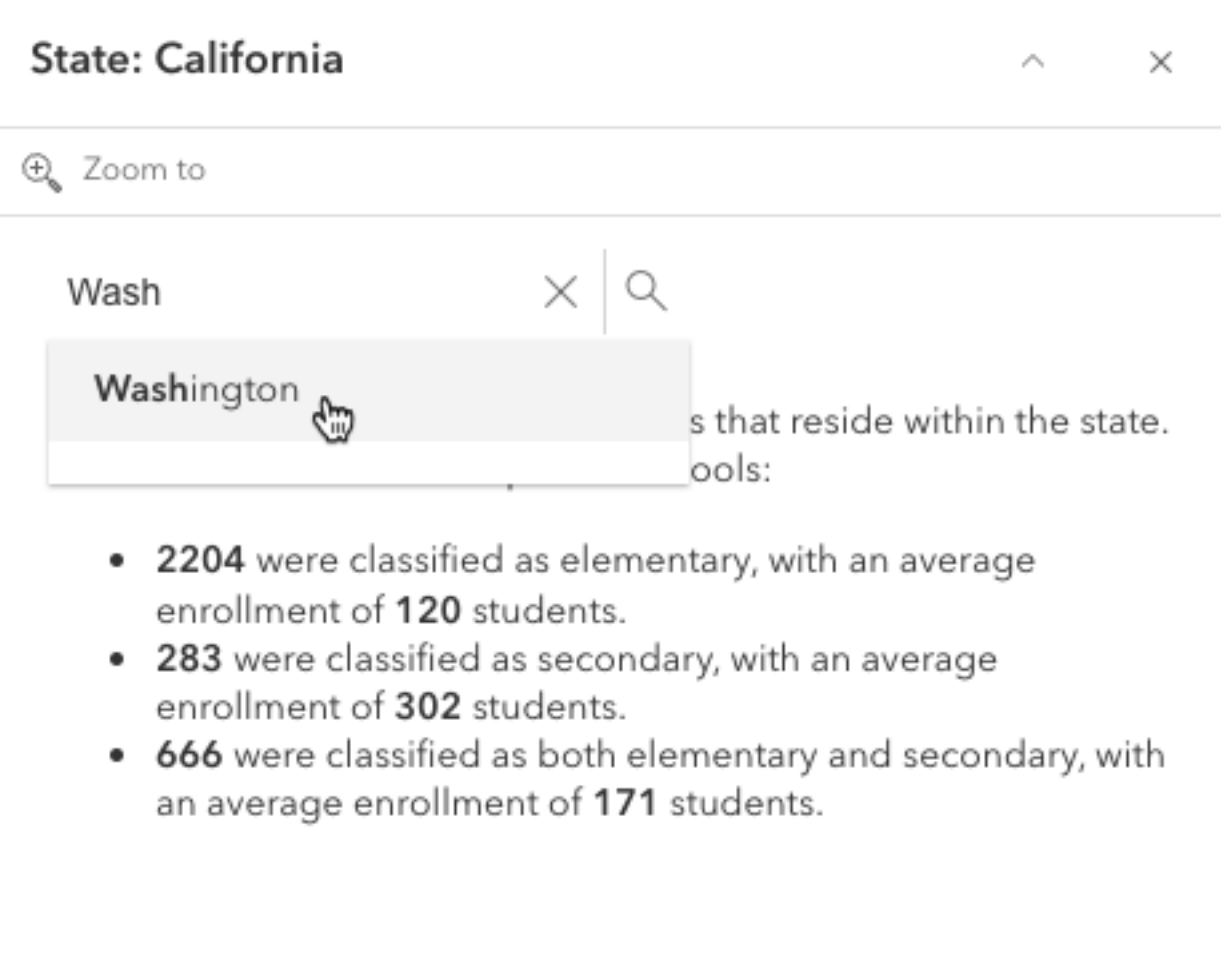
Lauren Boyd



Content

JS SDK Specific

- CustomContent:
 - Displaying a HTML Element
- Promise
 - Useful when calling method/executing query and want to display results
- Function
 - Popup may require additional processing



The screenshot shows a web application interface for searching content within a specific state. The title bar reads "State: California". Below the title bar is a search input field containing "Wash". A dropdown menu is open, showing "Washington" as the selected option. To the right of the search input, there is a search icon and a close icon. Below the dropdown menu, there is a list of results for "Washington" that reside within the state. The results are as follows:

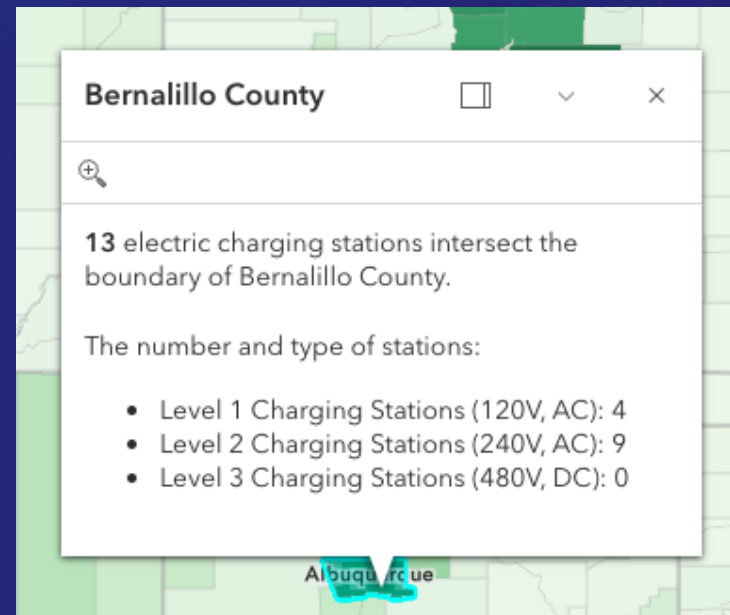
- **2204** were classified as elementary, with an average enrollment of **120** students.
- **283** were classified as secondary, with an average enrollment of **302** students.
- **666** were classified as both elementary and secondary, with an average enrollment of **171** students.

Content

JS SDK Specific

- CustomContent:
 - Displaying a HTML Element
- Promise
 - Useful when calling method/executing query and want to display results
- Function
 - Popup may require additional processing

```
countiesLayer.popupTemplate = {  
  title: "{NAME}",  
  content: queryChargingStations  
};  
function queryChargingStations(target) {  
  ...  
  // query data from another layer  
  return query.executeQueryJSON(queryUrl, queryObject).then((result) => {  
    // return data as formatted popup content  
  });  
}
```



Content

JS SDK Specific

- CustomContent:
 - Displaying a HTML Element
- Promise
 - Useful when calling method/executing query and want to display results
- Function
 - Popup may require additional processing

```
1 function formatContent
2   // Check if t
3   // the color
4   let color =
5     feature.g
6     ? "gre
7     : "re
8
9   let textConte
10  // Create the
11  // the featur
12  if (feature.g
13    textConte
14    `<b>{
15    color + ;`>{ACCESS}</span> ;
16  } else {
17    textConte
18    `{TRA
19    color
20  }
21  return [textC
22  };
```

#76 Kirkland Creek Backcountry Campsite

Zoom to

#76 Kirkland Creek resides along Lakeshore Trail. This site is currently **Open** and can be reached by Hiker Only.

There are 6 sites and resides in Swain, North Carolina. Site access restriction: Hiker.

< > 1 of 2

Lakeshore Trail

Zoom to

Lakeshore Trail is a **Bridle Path** and currently **Open**. Near Hazel Creek and **Unrestricted**.

< > 2 of 2

Docking

```
viewElement.popupElement.dockEnabled = true
viewElement.popupElement.dockOptions = {
  // Removes the dock button.
  buttonEnabled: false,
  // Ignores the default window size that triggers
  // docking so the popup is always docked when
  breakpoint: false,
  // Sets the position of the popup.
  position: 'top-left',
};
```

Popup UI Elements

featureNavigation →

heading →

actionBar →

Union County in New Jersey

Zoom to

The median household income in this area is estimated to be **\$95,000.00** (\pm \$2,210.00).

Median income details for Union County

Age Group	Median Household Income
18-24	50,000
25-34	95,000
35-44	115,000
45-54	70,000

Income by householder age

Median household income by householder age.

1 of 3

closeButton

collapseButton

featureMenuHeading

featureListLayerTitle

Select feature

Total: 4

Facilities for Wildland Fire Protection

Untitled

Wildfire Burn Areas

GLASS Fire

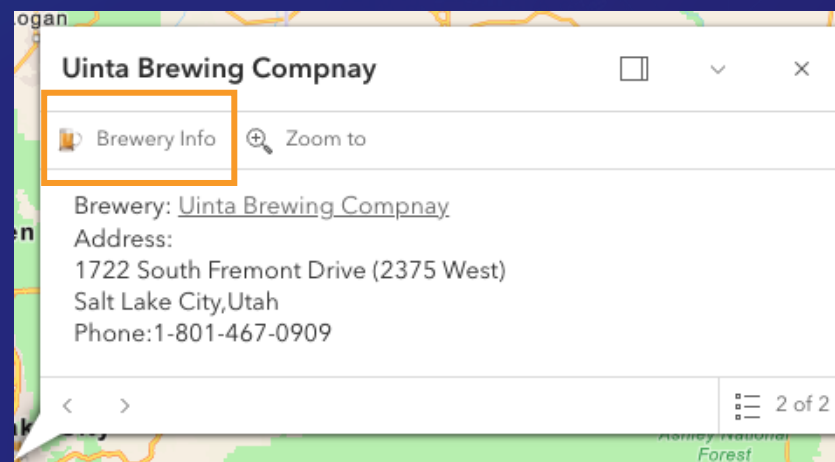
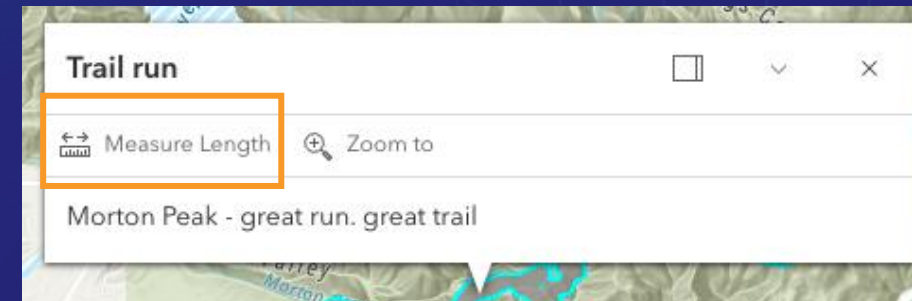
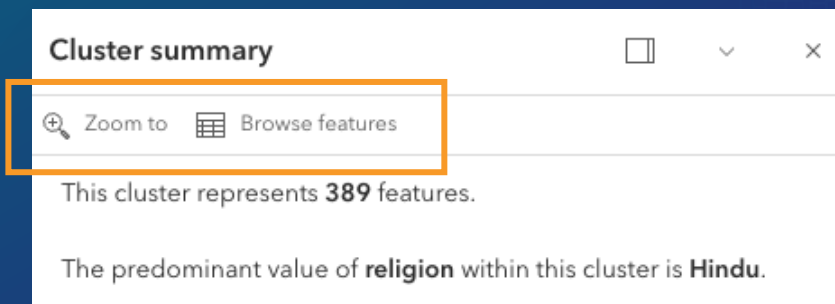
Incorporated City Boundaries

St. Helena, California

Back

Actions

- Default actions
 - Zoom to
 - Browse features (clustering)
- Custom actions
 - Styled with image or Calcite icon





Custom actions & Popup UI

Lauren Boyd

Best practices

- Go beyond or create clean fields list
- Handle nulls
- Create a web map with custom pop-ups
- Save pop-ups back to layer item
- Set layer level field formatting

What's next?

- Keyboard feature selection
- Added layer support for field formatting
- Updated attachment viewing
- OGC Feature layer Arcade support
- Popup component CSS tokens
- Vector tile support

Blogs



[Go global with smarter field formatting](#)



[Pop-ups: Introducing attachment filtering](#)



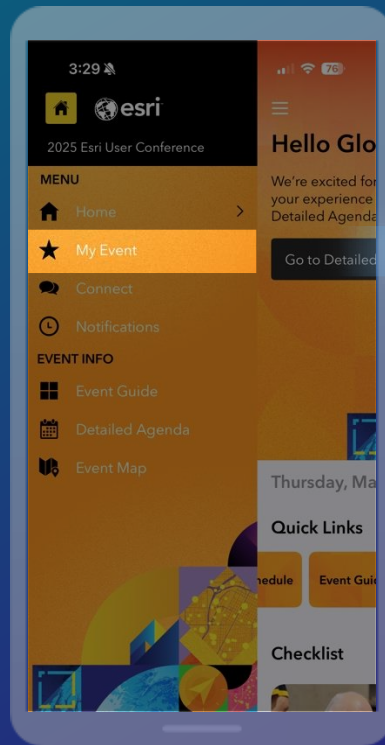
[Spruce up your pop-up content with CSS](#)



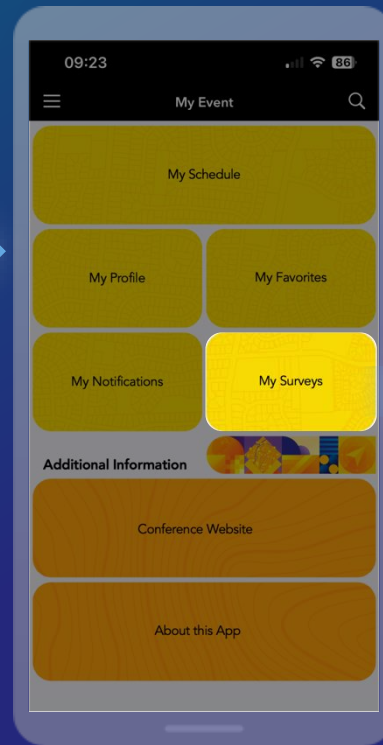
[Introducing custom colors in pop-up charts](#)

Please share your feedback in the app

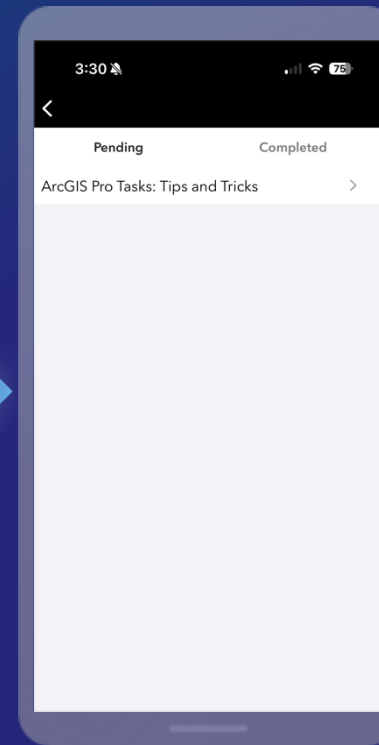
Select "My Event" in the event app main menu



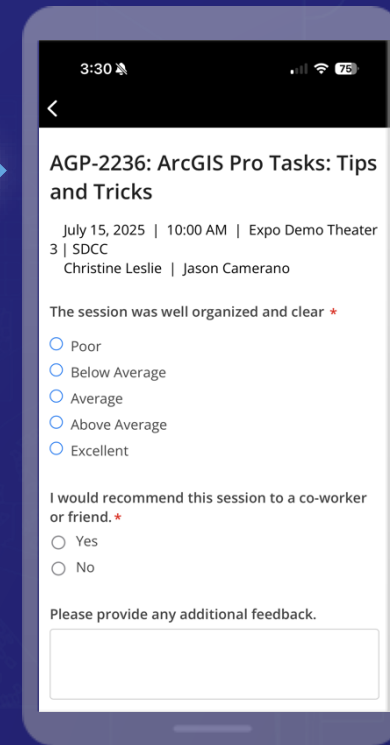
Select "My Surveys"



Select the desired survey



Complete the survey



Connect with us on social

Join the conversation using [#EsriDevTech2026](#)



x.com/EsriDevs



x.com/EsriDevEvents



youtube.com/@EsriDevs



links.esri.com/DevVideos



github.com/Esri



github.com/EsriDevEvents



links.esri.com/EsriDevCommunity



Questions





```
map = new Map(BasemapStyle.ArcGISNavigation);  
map.initialViewpoint = new Viewpoint(40.72,  
-73.995,  
72000);  
mapView.Map = map;
```



```
struct ContentView: View {  
    @State private var map = {  
        let map = Map(  
            basemapStyle: .arcGISNavigation  
        )  
  
        map.initialViewpoint = Viewpoint(  
            latitude: 40.72,  
            longitude: -73.995,  
            scale: 72_000  
        )  
  
        return map  
    }()  
  
    var body: some View {  
        MapView(map: map)  
    }  
}
```



esri[®]

**THE
SCIENCE
OF
WHERE**[®]