

Using GIS Technology for Social Impact

University of Southern California

Noah Sager

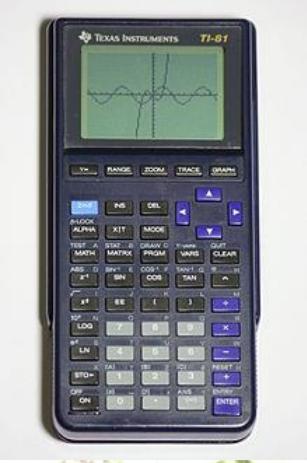
Product Engineer | ArcGIS API for JavaScript | Esri

@noashx

nsager@esri.com

Agenda

- 1. Who am I?**
- 2. What are we talking about?**
- 3. So what?**
- 4. GIS apps**
- 5. Career Opportunities**



"Go for it! You have everything to



What is...
Geography?



Everything is related.

Things that are closer
are more related than
things that are farther
away.



What is...

Geography?
GIS?



Geographic Information System (GIS) lets us visualize, question, analyze, and interpret data to understand relationships, patterns, and trends. GIS benefits organizations of all sizes and in almost every industry.



GIS is a
tool/science/technology
that collects, analyzes,
and visualizes spatial
relationships on a
computer*.



What is...

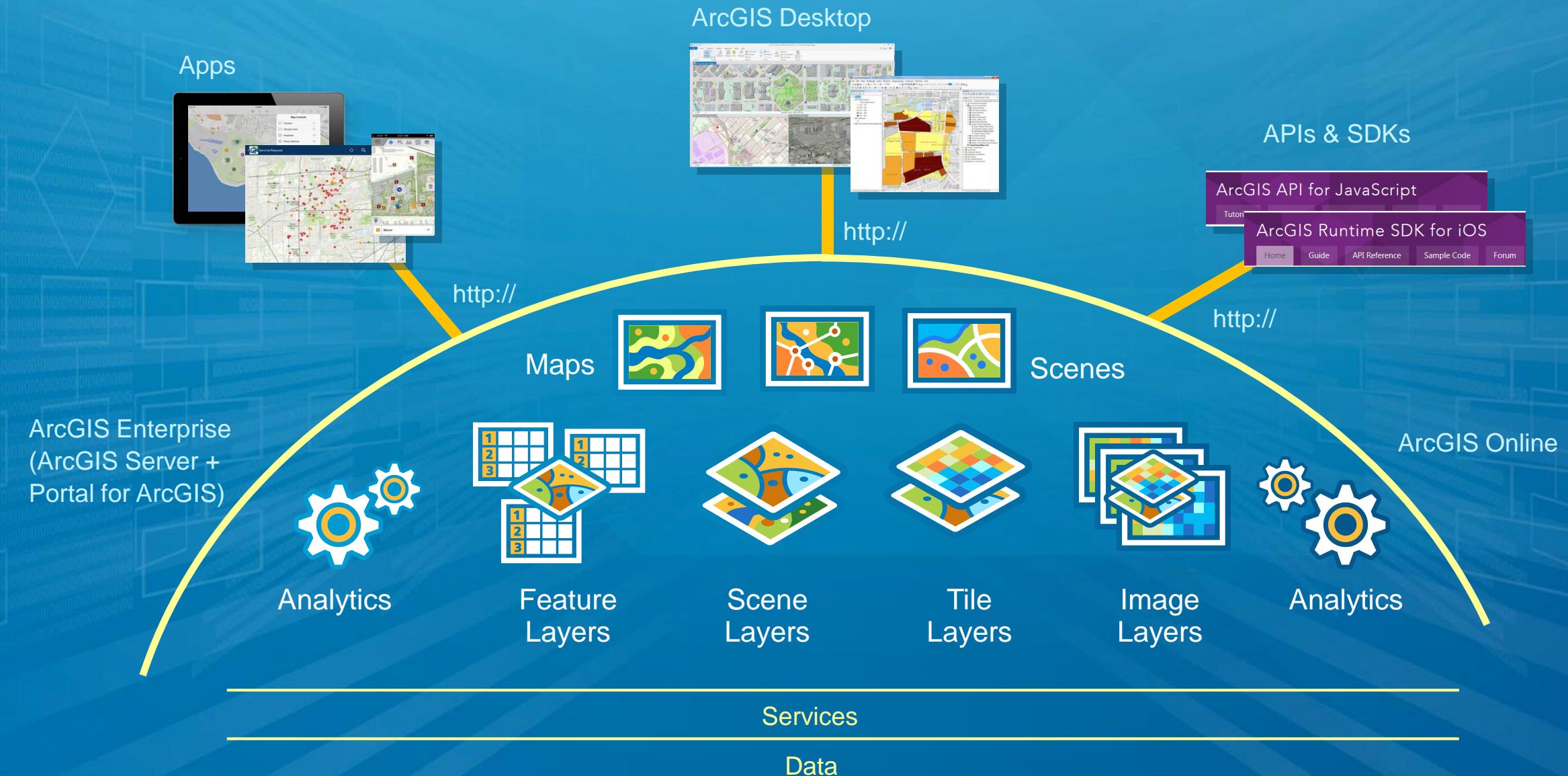
Geography?
GIS?
ArcGIS?



ArcGIS is an Esri GIS solution.

Desktop (Windows, Mac, Linux)
Mobile (Android, iOS, Windows)
Web (Chrome, IE, Opera, etc.)
Embedded (Car, Fridge, etc.)

The ArcGIS Platform





What is...

Geography?
GIS?
ArcGIS?
GIS Programming?



GIS Programming is a kickbutt way to solve geospatial problems and forward social causes in a creative and totally relevant/unique workflow.

A screenshot of the ArcGIS for Developers website. The top navigation bar includes links for "ArcGIS for Developers", "Dashboard", "Get Started", "Documentation", "Pricing", and "Support". A search icon and user profile "Noah" are also present. The main banner features a woman working on a laptop, with text overlay: "A complete mapping and analytics platform for developers". Buttons for "View Dashboard" and "Start Developing Your App" are shown. Below the banner is a row of developer tool icons: JS, Android, iOS, Coffee Cup, .NET, Qt, Python, REST, and Book.

ArcGIS for Developers

Dashboard + ▾ Get Started Documentation Pricing Support

Noah

A complete mapping and analytics platform for developers

[View Dashboard](#) [Start Developing Your App](#)

JS

Android

iOS

Coffee Cup

.NET

Qt

Python

REST

Book

ArcGIS for Developers

2D & 3D
Maps



Search &
Geocoding



Directions &
Routing



Location
Datasets



Spatial
Analysis



Data
Hosting



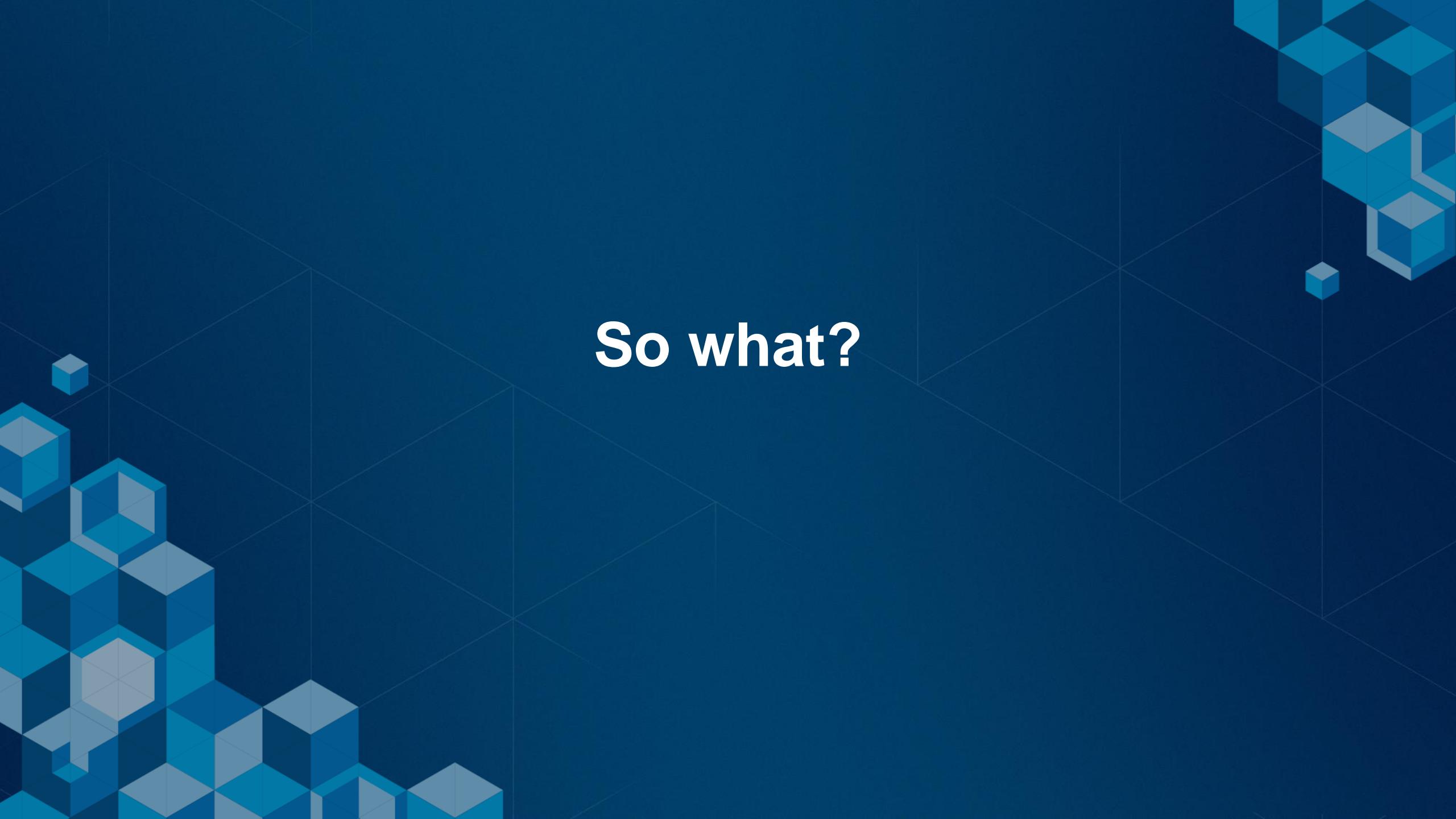
via

Our APIs & SDKs +
ArcGIS Online

APIs & SDKs

Runtime SDKs							
JavaScript API	Android	iOS	Java	.NET	Qt	Python API	REST API
Browser/Web						Scripting	
	Mobile			Cross-Platform			
			Desktop	Windows	Embed		



The background features a dark blue gradient with a subtle grid pattern. In the bottom left corner, there is a cluster of blue cubes of various sizes and shades, some with hexagonal faces. In the top right corner, there is another cluster of similar cubes, with one prominent cube standing vertically.

So what?

Faulty trail app leaves tourist stranded overnight on a cliff face

North Shore News

By **Brent Richter** - October 9, 2018



Share on Facebook



Tweet on Twitter



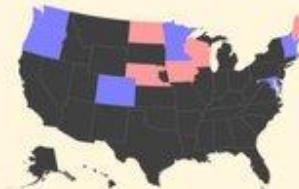
North Shore Rescue says a tourist using a faulty trail map app on his phone was led astray into danger Monday evening.

The hiker, a 37-year-old man who was visiting from the U.K., was using the Maps.me app to navigate his way off Crown Mountain.

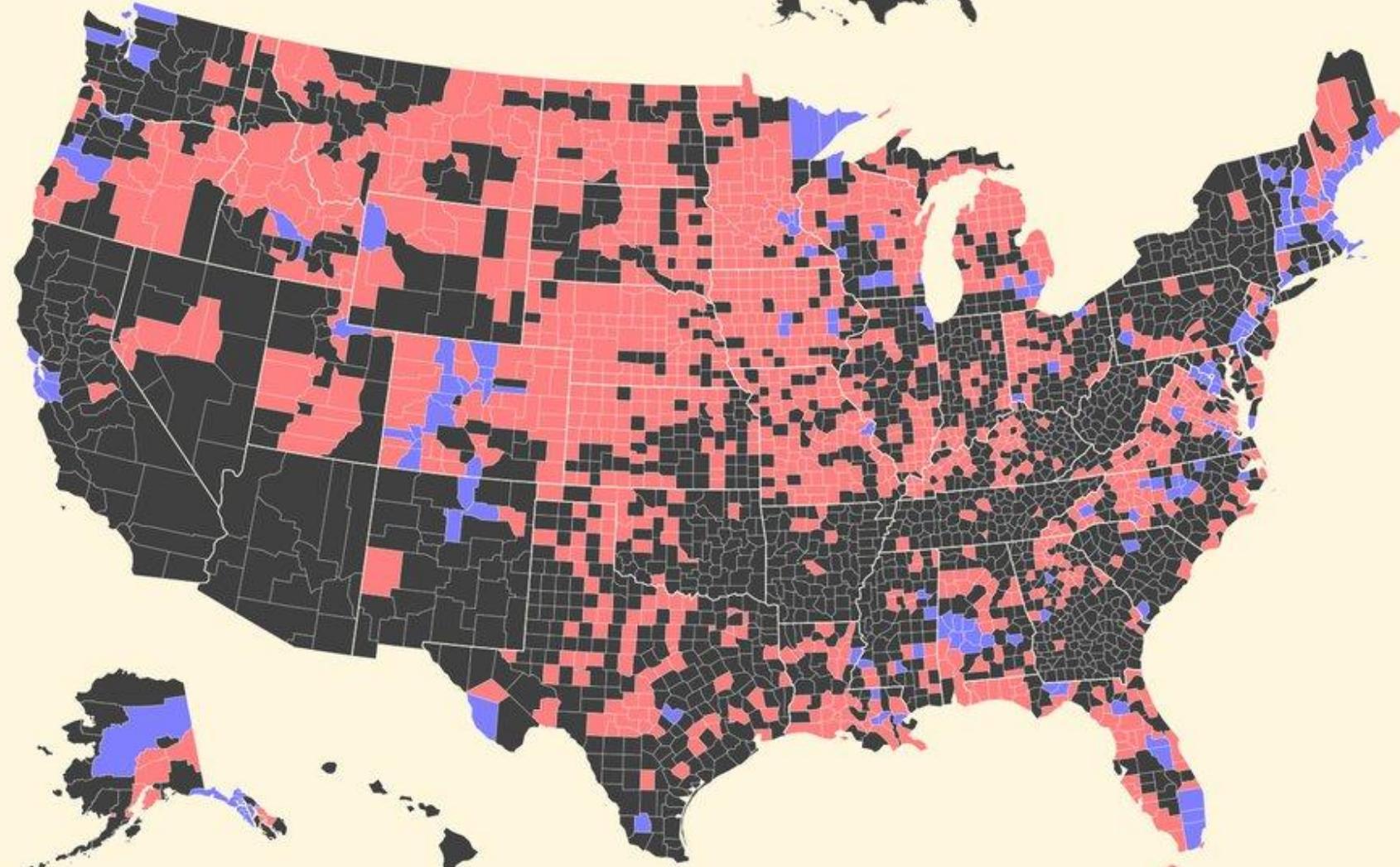


United States of Apathy

2016 US Presidential Election results if abstention from voting was counted as a vote for "Nobody"



- Donald Trump - 21 electoral votes
- Hillary Clinton - 72 electoral votes
- "Nobody" - 445 electoral votes, winner





GATOR

Find address or place



Legend

- Sub-Tropical Depression
- Sub-Tropical Storm
- Tropical Depression
- Tropical Storm
- Hurricane

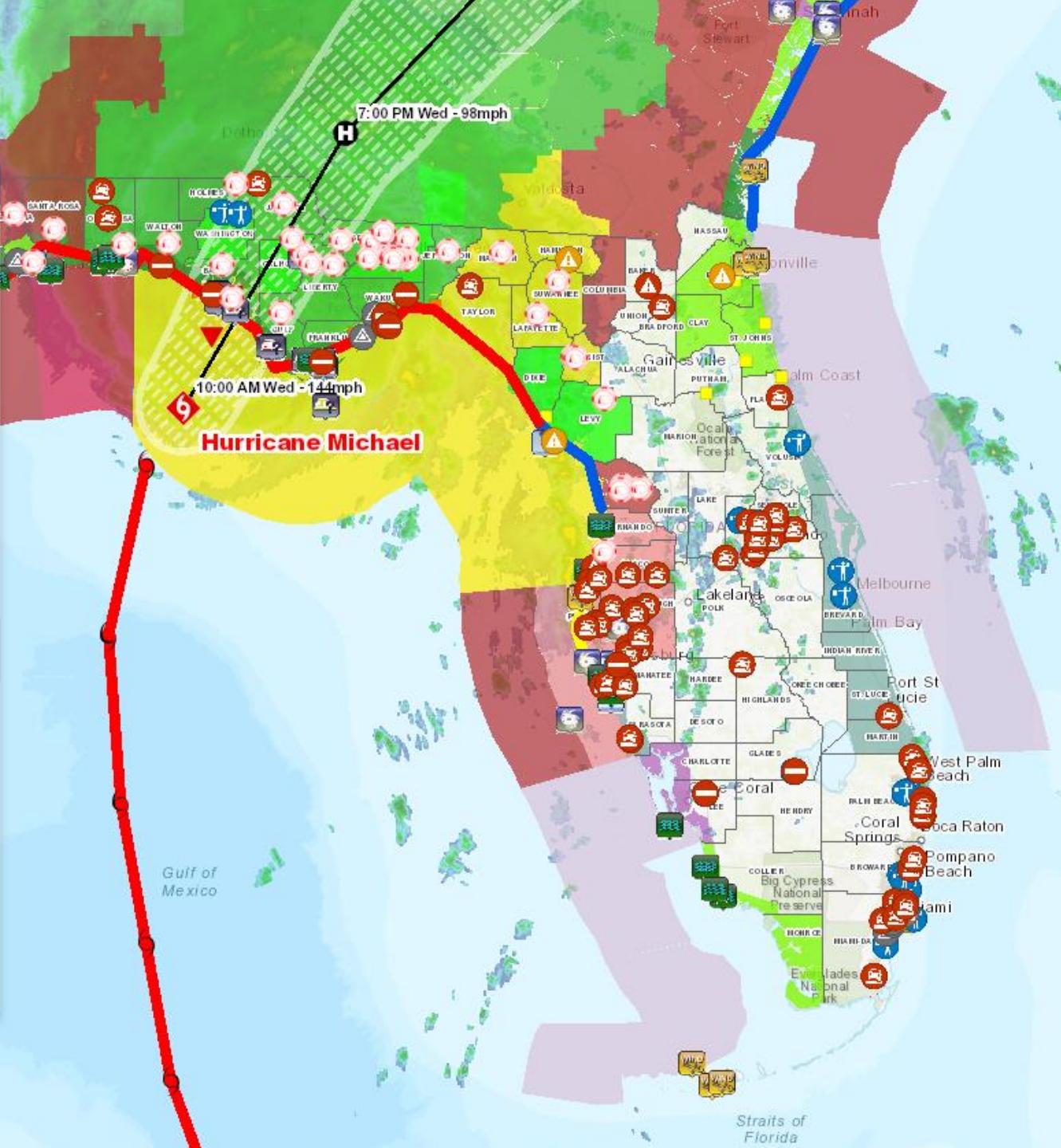
Past Track

- Post-Tropical Cyclone
- Wave
- Disturbance
- Low
- Sub-Tropical Depression
- Sub-Tropical Storm
- Tropical Depression
- Tropical Storm
- Hurricane

River Conditions

Currently Flooding (Florida)

- Major Flooding
- Moderate Flooding
- Minor Flooding
- Near Flood Stage
- Normal
- Low Threshold



Find address or location

Calgary
Regina
Vancouver
Seattle
Washington
Portland
Oregon
Idaho
Wyoming
Salt Lake City
Denver
Utah
Colorado
Nevada
Sacramento
San Francisco
Fresno
Las Vegas
California
Los Angeles
Phoenix
Tucson
New Mexico
Tijuana

RANCH FIRE

400km
300mi
52.467 -96.574 Degrees

Source: Esri, DigitalGlobe

About this application

About the map
Map legend

News Observations

- Active fire report
- Active perimeter

NWS Watches Warnings - Severe Events

- 911 Telephone Outage
- Administrative Message
- Air Quality Alert
- Air Stagnation Advisory
- Arroyo and Small Stream Flood Advisory
- Ashfall Advisory
- Ashfall Warning
- Avalanche Advisory



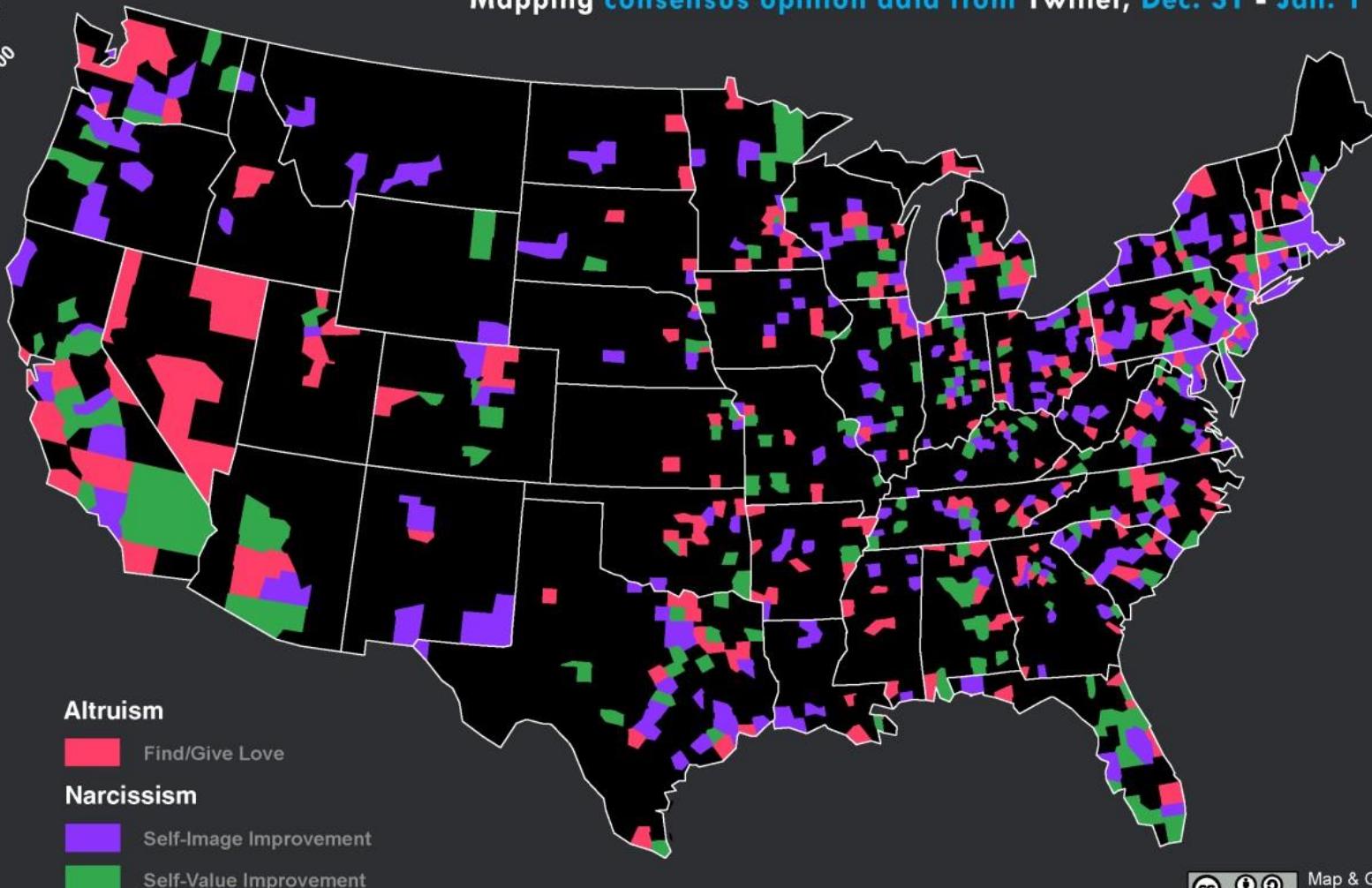
@ NewYears #Resolutions

Mapping consensus opinion data from Twitter, Dec. 31 - Jan. 1

#Resolution Tweets

0 100 200 300 400 500 600

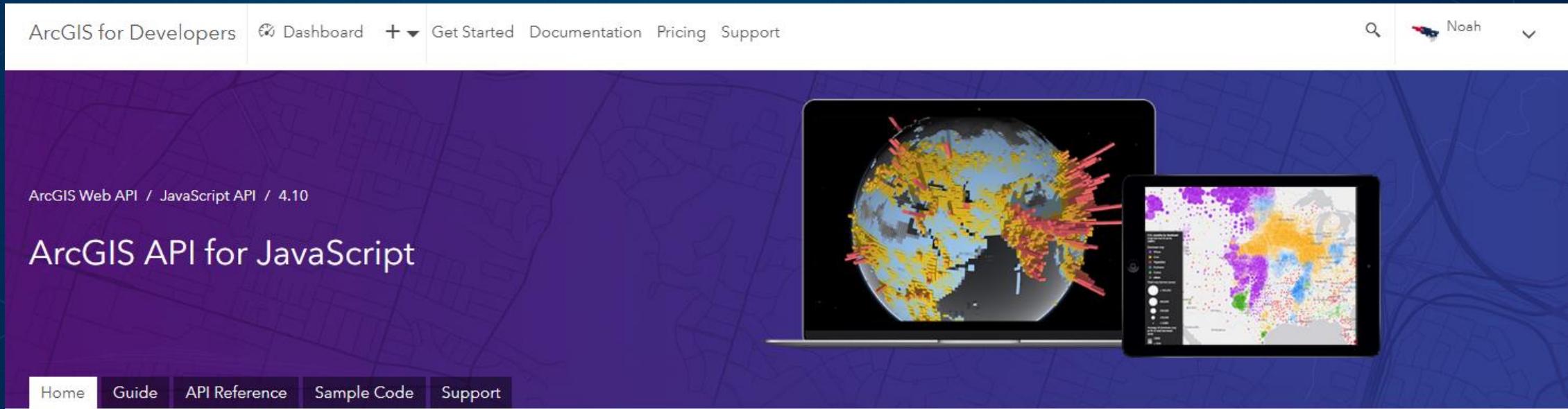
Love	500
Exercise	500
Quit Drinking	500
Earn More Money	500
Education	500
Family	500
Quit Smoking	500
Vacation	500
Volunteer/Donate	500
God/Jesus Pray	500



Map & Graphics
By Chris Cantey
mywebspace.wisc.edu/ccantey/web/

ArcGIS API for JavaScript

<https://developers.arcgis.com/javascript>



ArcGIS for Developers Dashboard Get Started Documentation Pricing Support Noah

ArcGIS Web API / JavaScript API / 4.10

ArcGIS API for JavaScript

Home Guide API Reference Sample Code Support

Build 2D and 3D web apps!

The 4.x series of the ArcGIS API for JavaScript integrates 2D and 3D into a single, easy-to-use, powerful mapping API. Create 3D maps as easily as 2D maps, seamlessly integrate your web GIS and build influential data-driven visualizations.

[Learn about 4.10](#)

```
// Reference the JavaScript API from our CDN and you are ready to get started:  
<link rel="stylesheet" href="https://js.arcgis.com/4.10/esri/css/main.css">  
<script src="https://js.arcgis.com/4.10/"></script>
```

Need to build a full-featured 2D web app with capabilities such as editing and support for all existing layer types?

[Go to 3.27](#)

Choosing a version ▶

Get the API | Release notes | FAQ | System requirements

Get Started with the ArcGIS DevLabs

Use the ArcGIS DevLabs tutorials to learn how to build mapping apps with ArcGIS APIs and SDKs.



What is ArcGIS?

Explore key components of the ArcGIS Platform and learn how to leverage them in your apps.

[Learn More](#)

Graphics and Data

Learn how to display points, lines, and polygons, configure popups, and import and style your data in ArcGIS.

[Start Labs](#)

Search and Directions

Learn how to leverage premium ArcGIS services to search for places and addresses, find routes and get directions.

[Start Labs](#)

Explore all the ArcGIS DevLabs

Find a DevLab tutorial for the exact project, task and API you need.

All Products						All Topics				

Update FeatureLayer using applyEdits()

The map displays a dense cluster of incident locations in Riverside, California, marked by various icons such as red flags, green trees, orange cones, and blue question marks. The locations are scattered across several neighborhoods, including Redlands, Cypress Park, and Citrus Hill. A callout box titled "Report Incidents" contains the following information:

- Click Add incident button
- Click on the map to create the incident
- Change the incident type

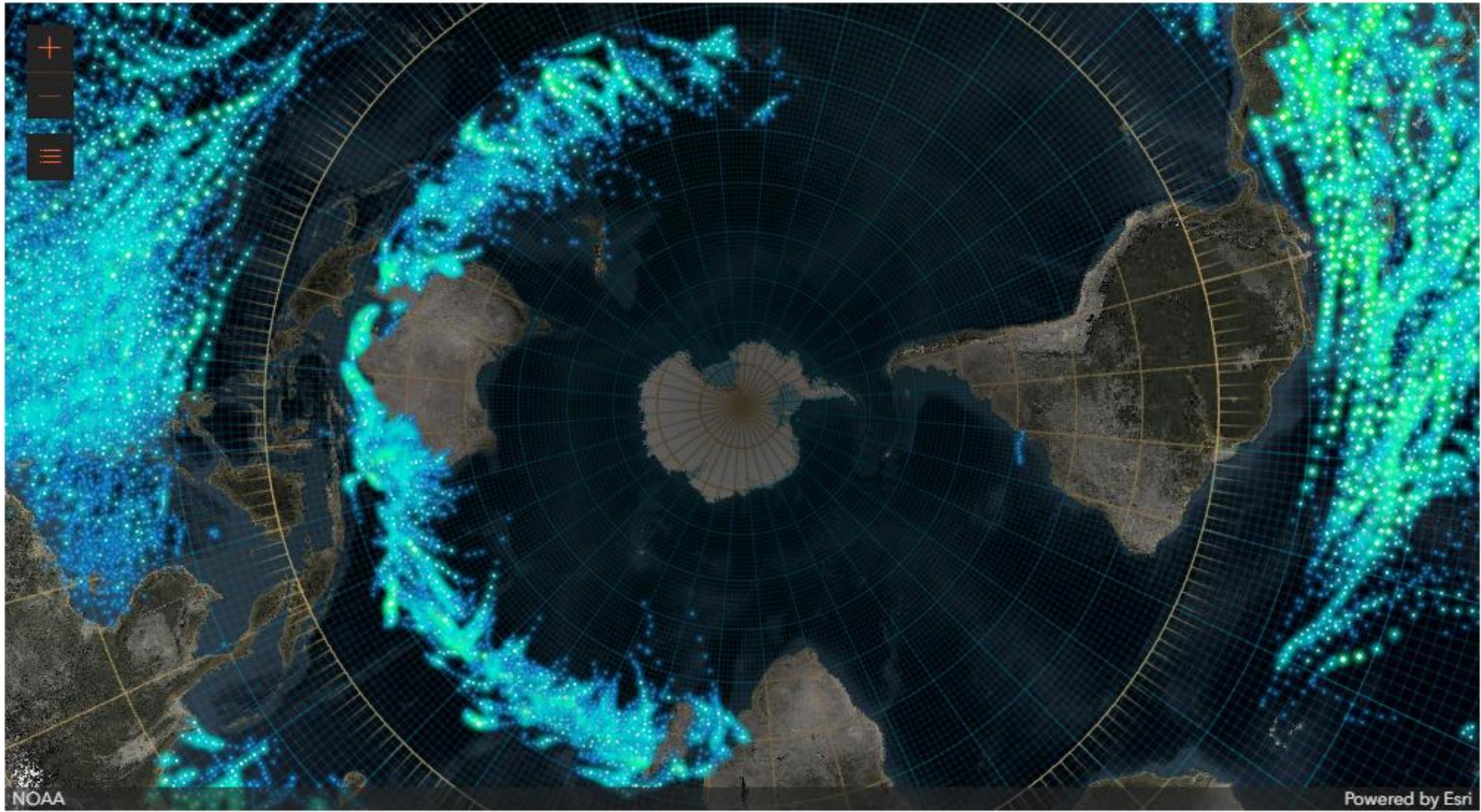
Add incident

Or

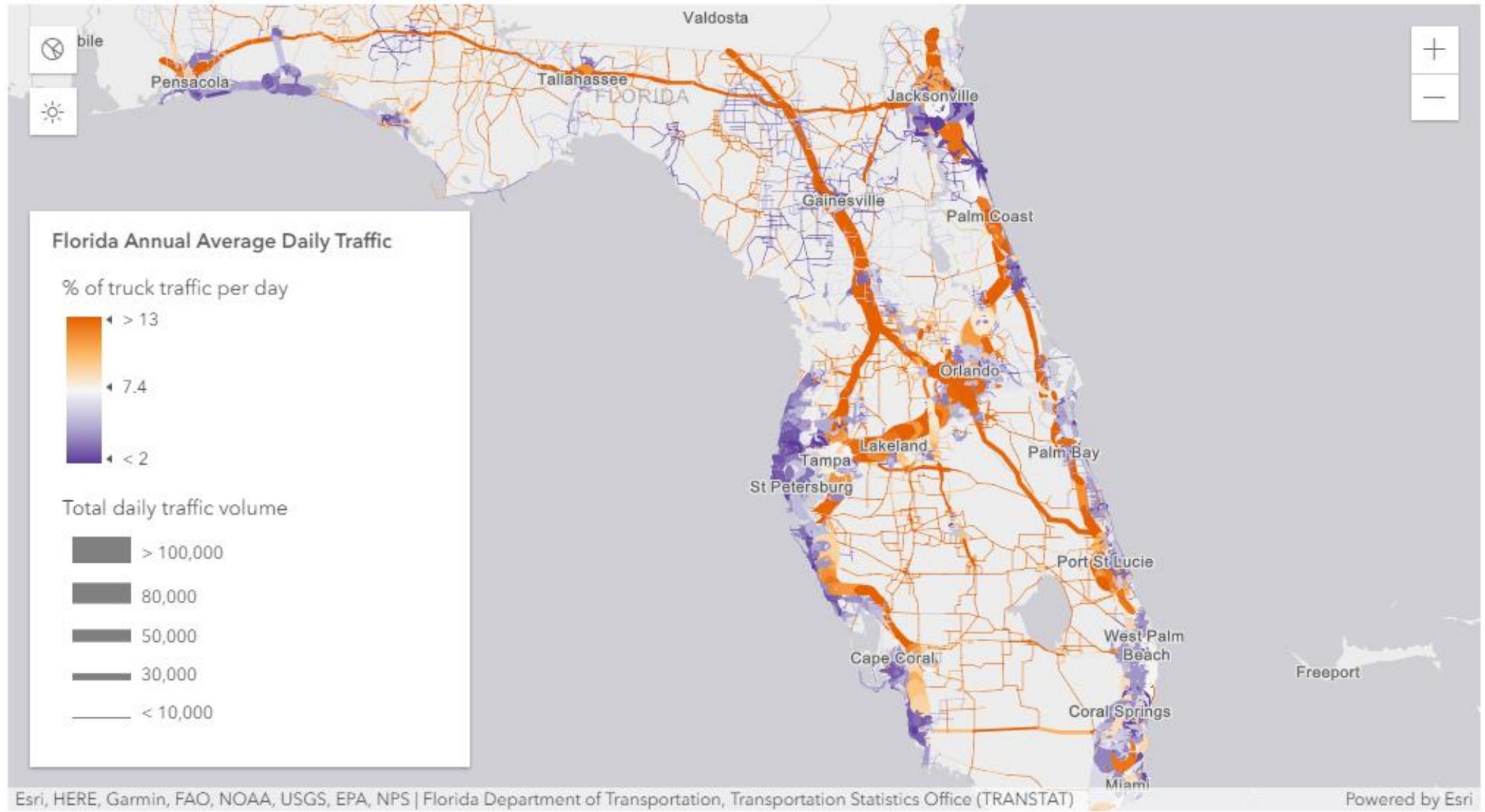
Select an incident to edit or delete.

City of Riverside, County of Riverside, Esri, HERE, Garmin, INCREMENT P, NGA, USGS | Esri, HERE

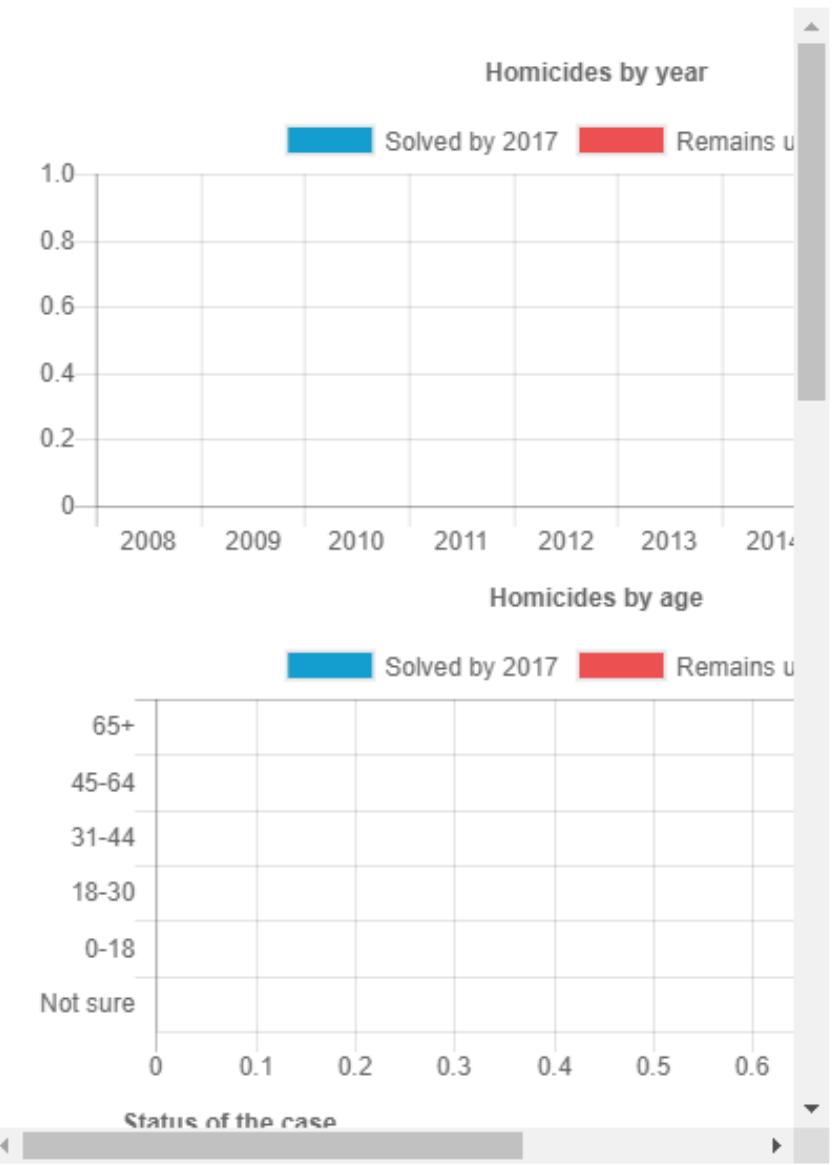
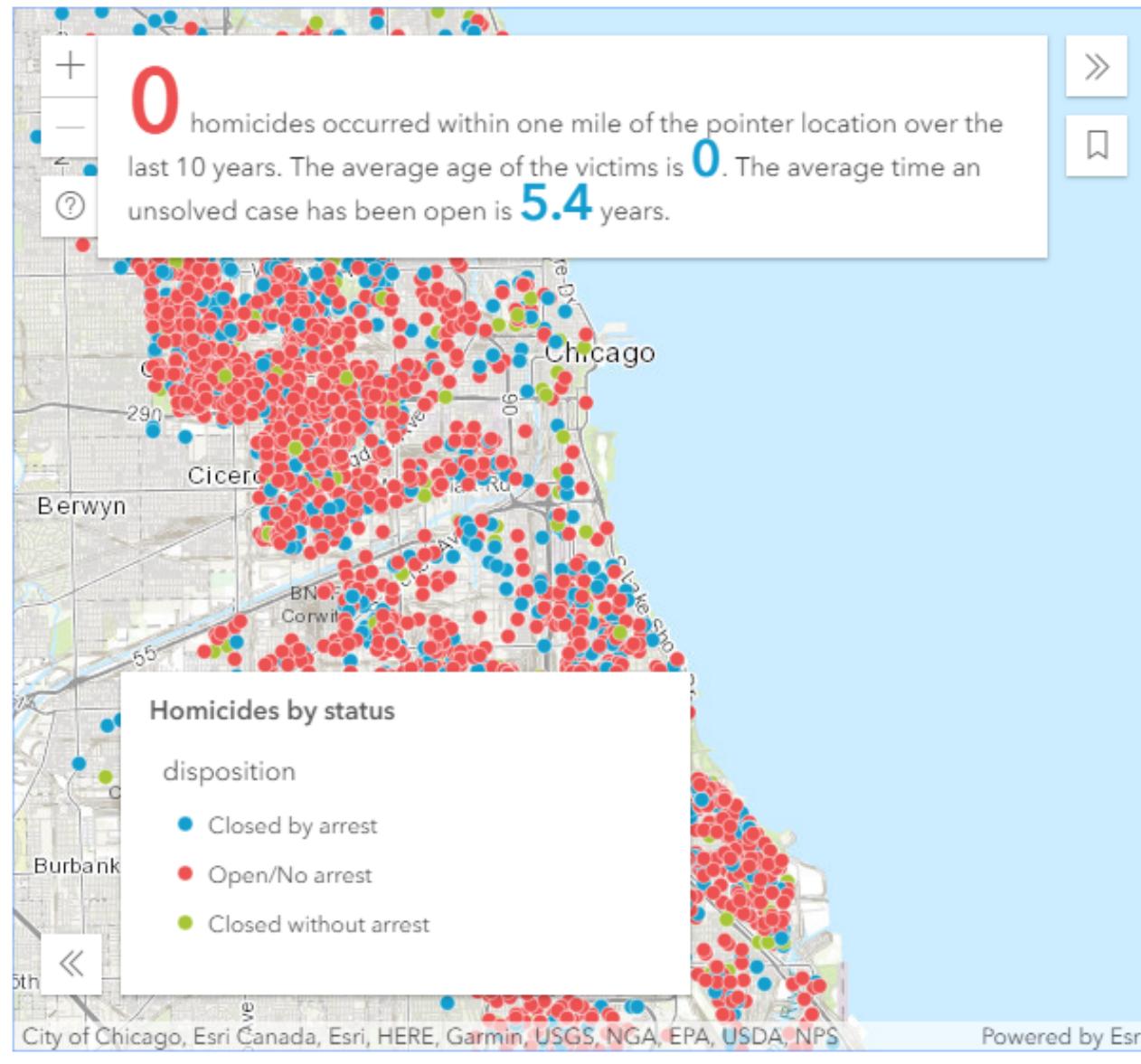
CSVLayer - Project points on the fly

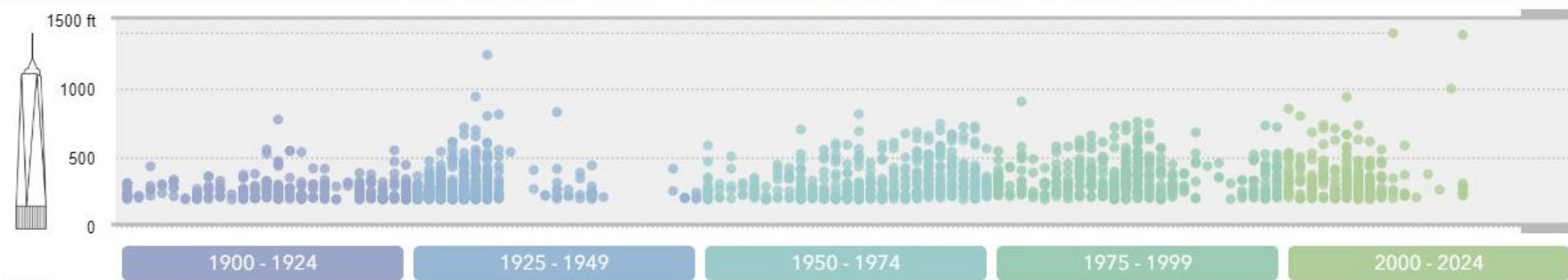


Multivariate data exploration



Query statistics client-side by distance

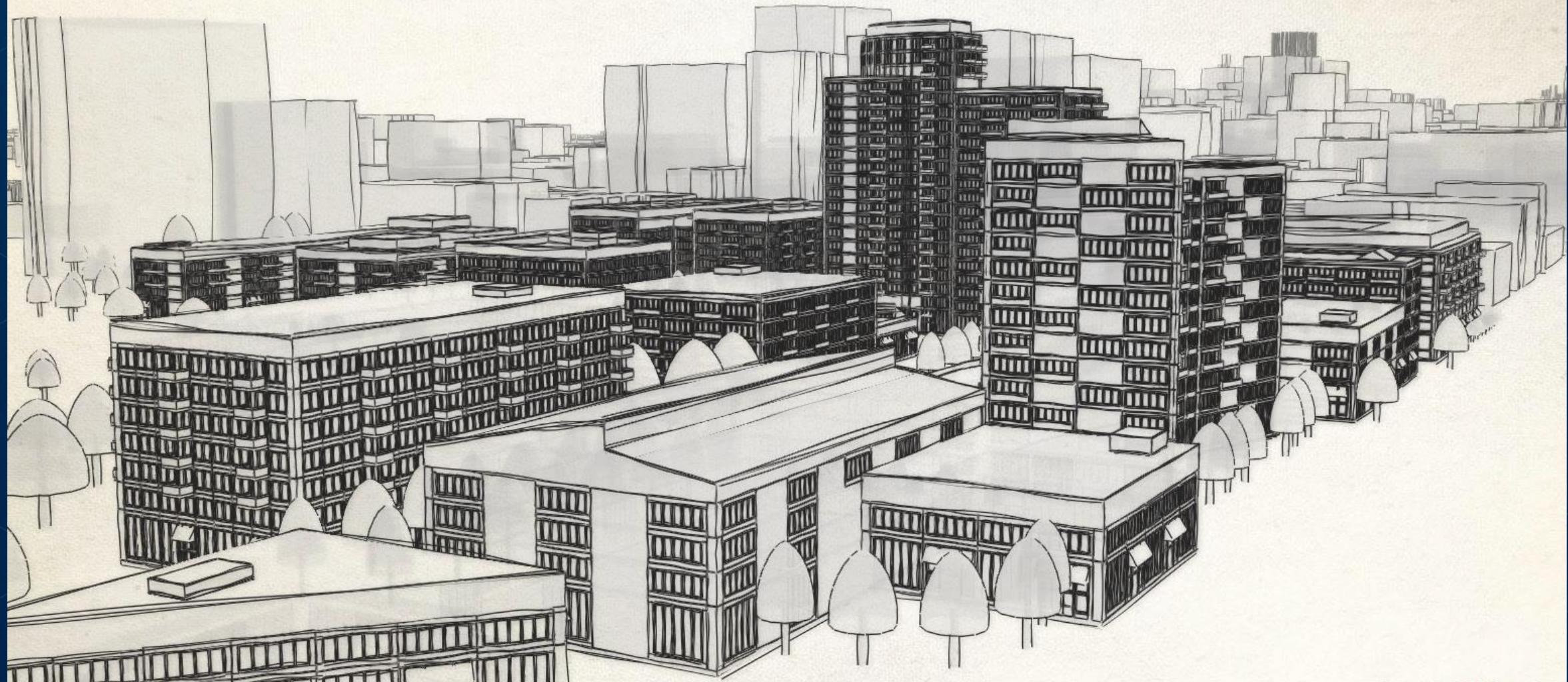




App credit: Raluca Nicola - @nicolaraluk

San Francisco New York - Manhattan Paris Berlin Washington D.C.

Chalk



Made with ArcGIS API for JavaScript
Powered by Esri

App credit: Raluca Nicola - @nicolaraluk

Web AppBuilder for ArcGIS (Developer Edition)

[Download SDK](#)

Version 2.11 · January 2019

[Home](#) [Guide](#) [API Reference](#) [Sample Code](#) [Support](#)

Create custom widgets and themes for Web AppBuilder.

Get Web AppBuilder for ArcGIS (Developer Edition) to create custom widgets and themes. Boost your productivity by extending the framework. Build powerful GIS apps that run on desktops, tablets, and smartphones.

[What's New](#) | [License](#) | [Key Features](#) | [Developer's Overview](#)



GATOR

Find address or place



Legend

- Sub-Tropical Depression
- Sub-Tropical Storm
- Tropical Depression
- Tropical Storm
- Hurricane

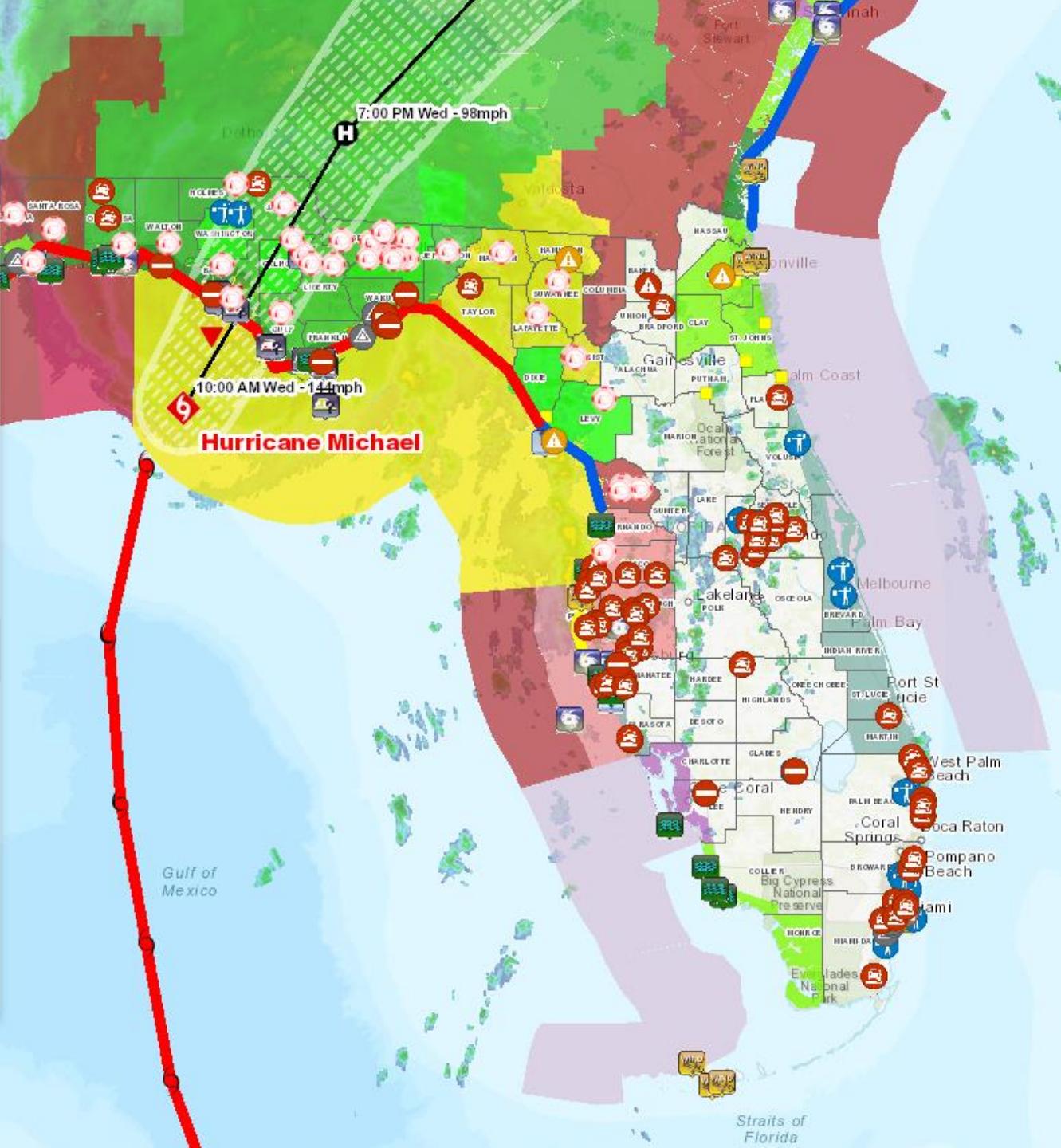
Past Track

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River Conditions

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- Moderate Flooding
- Minor Flooding
- Near Flood Stage
- Normal
- Low Threshold



ArcGIS Online

Configurable Apps App Template

Create a web app

What do you want to do?

Show All

Build a Story Map

Collect/Edit Data

Compare Maps/Layers

Explore/Summarize Data

Interpret Imagery

Map Social Media

Provide Local Information

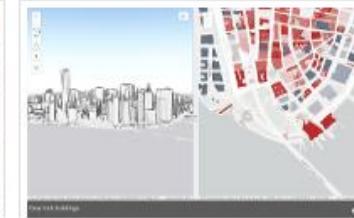
Route/Get Directions

Showcase a Map

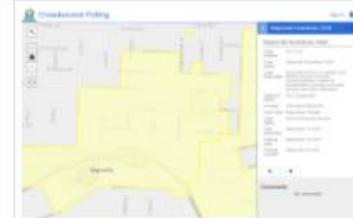
Select a configurable app. ?



Basic Viewer



Compare



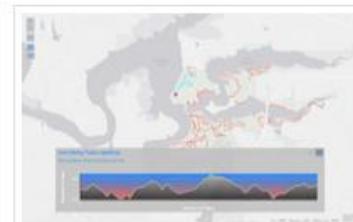
Crowdsourcing



Directions



Edit



Elevation Profile



Cancel

Esri Leaflet

A lightweight set of tools for using ArcGIS services with [Leaflet](#).

[Examples](#)[API Reference](#)[Download](#)[Terms](#)

Career Opportunities



STUDENTS AT ESRI

INNOVATION, COLLABORATION, PROFESSIONAL AND
PERSONAL GROWTH

Whether you are looking to gain hands-on experience to add to your résumé or you're ready to launch your career, you'll find this and much more at Esri.

New Grads

Internship Program

Student Assistantship Program

30 POSITIONS

Job Category

CAREERS HOME

JOB SEARCH

RECRUITING EVENTS

STUDENTS & GRADS

BENEFITS



<https://community.esri.com/community/esri-young-professionals-network>



Products

Industries

About

Support



Sign In

GeoNet

The Esri Community

Home

My News

Browse GeoNet ▾

Communities ▾

ArcGIS Ideas

GeoNet Resource Hub

Log in



All Places >

Esri Young Professionals Network

Actions ▾



Overview

Esri UC

FedGIS

Regional Events

Activity

Content

People

Subspaces

Calendar

<https://community.esri.com/groups/geodev>

The screenshot shows the Esri Geo Developers group page. At the top, there's a banner image of a group of people in a conference room. Below the banner, the group name "Geo Developers" is displayed, along with navigation links for "Activity", "Content", "People", and "Calendar". On the right side of the header, there are "Actions" and an information icon.

The main content area features a purple circular profile picture of the Earth. To its right are three smaller map images: a world map showing the Tyrrhenian Sea, a San Francisco Crime Map, and a map of New York City with red and yellow lines. Below these are the group's statistics: Tweets (1,999), Following (1,877), Followers (4,438), Likes (1,123), and Lists (3).

The left sidebar contains the group's bio: "For our unique GeoDev friends, a special Twitter account. We hope to meet you at a #GeoDev Meetup, tech conference, hackathon or the #DevSummit." It also lists the location as Redlands, CA, the website as developers.arcgis.com, and the joining date as August 2010. There are "Tweet to" and "Message" buttons at the bottom of this sidebar.

The central column has tabs for "Tweets", "Tweets & replies", and "Media". A tweet from "Esri GeoDev" (@EsriGeoDev) is shown, mentioning a presentation at a #GeoDev Meetup in Portland, Maine. Below the tweet are two small images: one of a person at a podium and another of a group of people seated around a table.

The right sidebar is titled "Who to follow" and lists three accounts: "ArcGIS Enterprise" (@ArcGl...), "Amy Niessen" (@AmyNiessen), and "Esri Globe" (@EsriGlobe). Each account has a "Follow" button next to it.

@EsriGeoDev

<https://www.esri.com/en-us/industries/sustainability/nonprofit-program/overview>

esri Products Industries Support & Services About

Sustainability Overview Segments Nonprofit Program

Nonprofit Program

Get equipped with tools and training without busting your budget

What's included

The Esri Nonprofit Organization Program provides access to the tools you need to bring location intelligence to your organization. It offers low-cost, 1-year-term licenses for the ArcGIS Platform. Contact us about other product discounts not featured below.

esri & THE SCIENCE OF WHERE

Sustainable Development
@Esri_Nonprofit Follows you

Nonprofits worldwide are using Esri technology to address the world's most pressing environmental and humanitarian challenges.

Redlands, CA
esri.com/nonprofit
Joined July 2015

[Tweet to](#) [Message](#)

@Esri_Nonprofit



Support

Contact Support

USA +1-888-377-4575

Search Esri Support



Products ▾

Knowledge Base

Downloads

Other Resources ▾

Manage Cases

Request Case

Start Chat

Desktop

ArcGIS Desktop

Industry Focused Extensions

Data and Workflows Extensions

Enterprise

ArcGIS Server

Server Components

Portal for ArcGIS

and more...

Online

ArcGIS Online

Developers

Web APIs

Native Runtime SDKs

ArcGIS Engine

and more...

Apps

Web Apps

Mobile Apps

Plug-in Apps

and more...

More Products

Business Analyst

Esri CityEngine

Content

and more...



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Please select a country/region

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Esri Headquarters

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Redlands, CA 92373-8100

Email support@esri.com

Phone +1-909-793-3774

Toll-free +1-888-377-4575

Fax +1-909-792-0960

Website <http://support.esri.com>

Support Web Form <http://support.esri.com/en/webform>

Developers

Web APIs

[ArcGIS API for JavaScript](#)

Native Runtime SDKs

[ArcGIS Runtime SDK for .NET](#)

[ArcGIS Runtime SDK for Android](#)

[ArcGIS Runtime SDK for iOS](#)

[ArcGIS Runtime SDK for Java](#)

[ArcGIS Runtime SDK for macOS](#)

[ArcGIS Runtime SDK for Qt](#)

[ArcGIS Runtime SDK for Windows Mobile](#)

ArcGIS Engine

[ArcGIS Engine](#)

[ArcGIS Engine for Linux](#)

Desktop SDKs

[ArcGIS Explorer SDK \(.NET\)](#)

[ArcGIS Pro SDK \(.NET\)](#)

[ArcObjects SDK \(.NET\)](#)

[ArcObjects SDK \(C++\)](#)

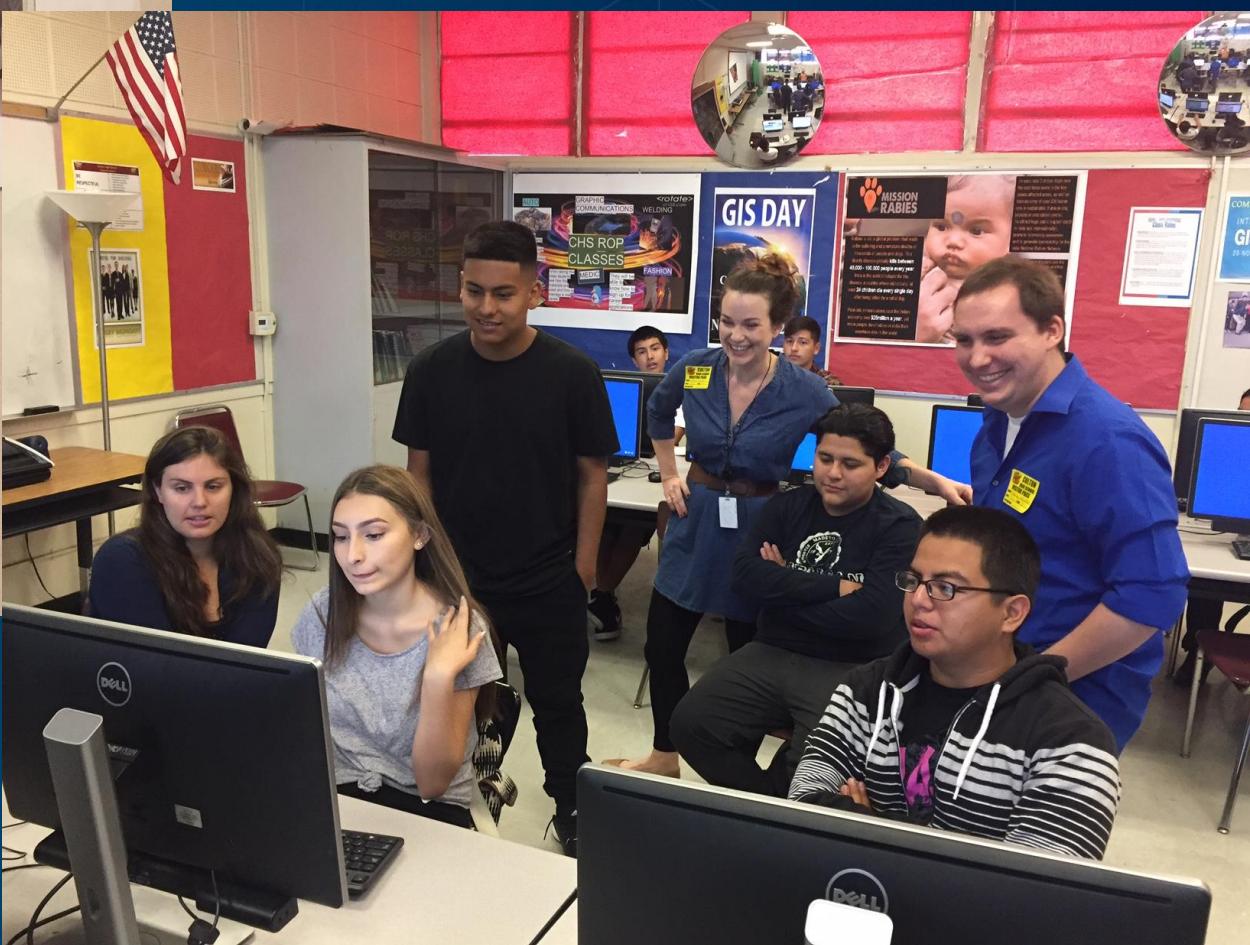
[ArcObjects SDK \(Java\)](#)

Web AppBuilder for ArcGIS (Developer Edition)

[Web AppBuilder for ArcGIS \(Developer Edition\)](#)

Scripting and Automation

[ArcGIS Python API](#)



Hackathons



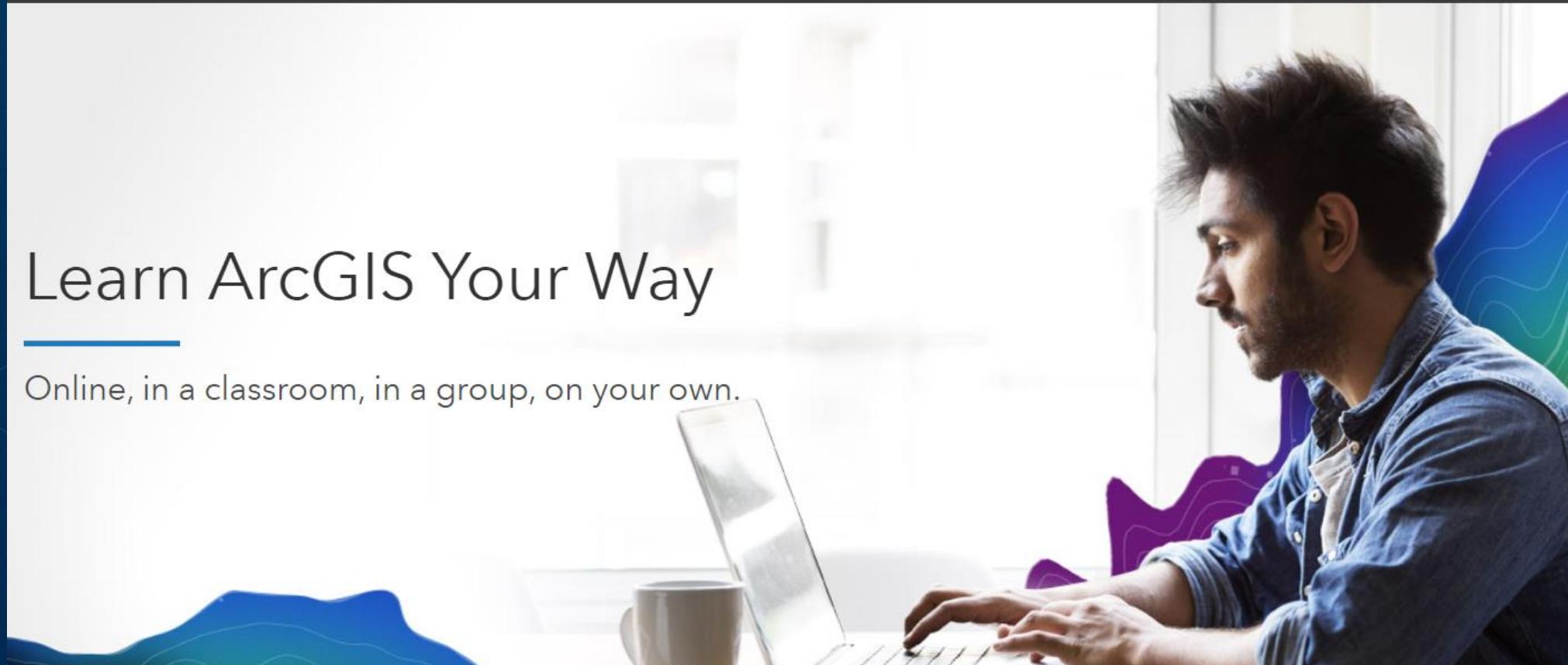
Outreach





Learn ArcGIS Your Way

Online, in a classroom, in a group, on your own.



Search Courses



My Dashboard



Learning Plans



Class Schedule



About Us

<https://www.esri.com/training/>



Search All Videos



The Science of Where - Unlock Data's Full Potential

We believe digital transformation is leading business, government, and society into a new technological frontier. As the global market leader in geographic information...

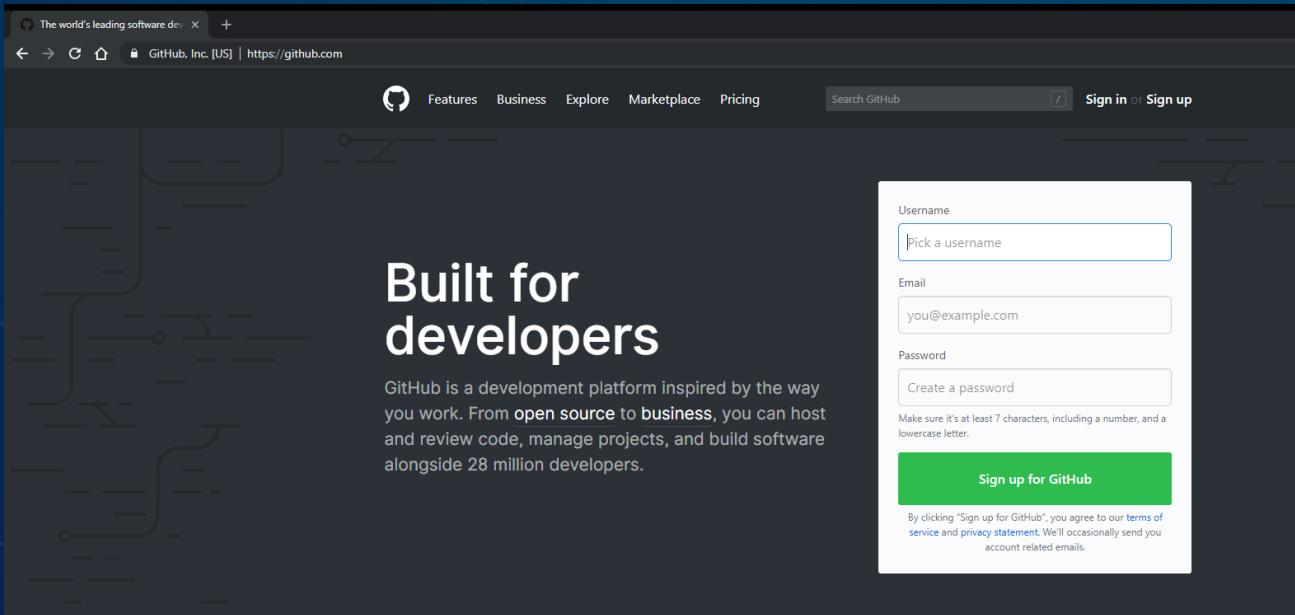
[Watch Now →](#)

THE
SCIENCE
OF
WHERE

<https://www.esri.com/videos>

Unsolicited Advice

The world's leading software dev + GitHub, Inc. [US] | https://github.com



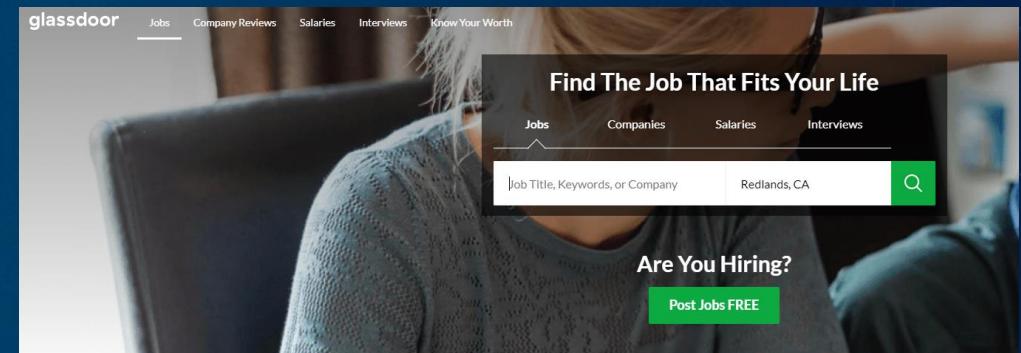
The GitHub homepage features a dark background with a faint circuit board pattern. On the left, there's a large white text area with the heading "Built for developers". Below it, a paragraph explains GitHub as a development platform. On the right, there's a sign-up form for GitHub.

Built for developers

GitHub is a development platform inspired by the way you work. From **open source to business**, you can host and review code, manage projects, and build software alongside 28 million developers.

Sign up for GitHub

By clicking "Sign up for GitHub", you agree to our [terms of service](#) and [privacy statement](#). We'll occasionally send you account related emails.



The Glassdoor homepage has a blue header with the company logo and navigation links: Jobs, Company Reviews, Salaries, Interviews, and Know Your Worth. A large banner features a woman in a blue top. To the right, there's a search bar and a "Post Jobs FREE" button.

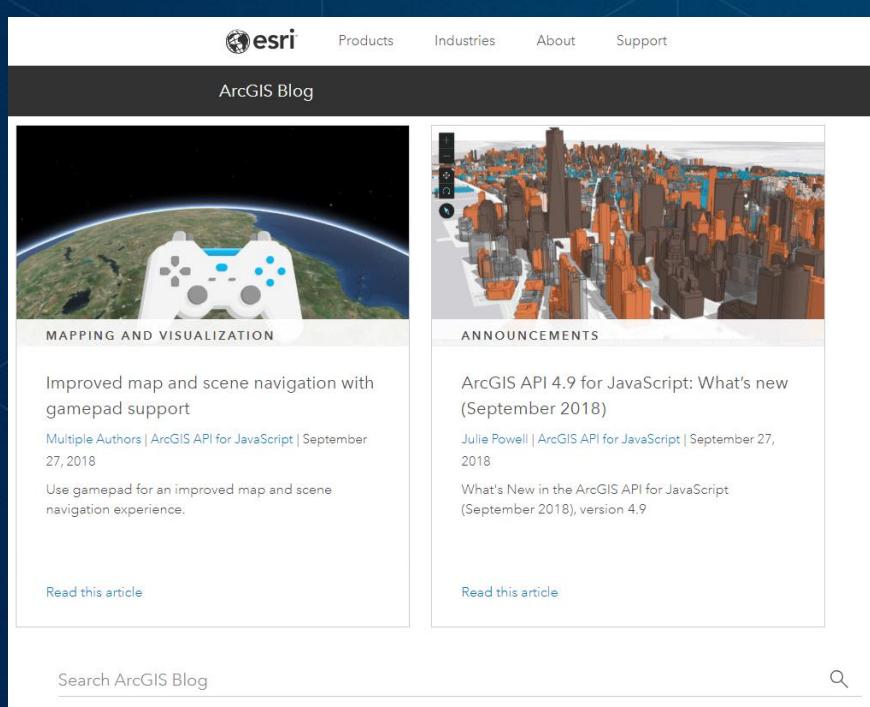
Find The Job That Fits Your Life

Jobs Companies Salaries Interviews

Job Title, Keywords, or Company Redlands, CA

Are You Hiring?

Post Jobs FREE



The ArcGIS Blog homepage features a dark header with the Esri logo and navigation links: Products, Industries, About, and Support. Below the header, there are two main blog posts. The first post, "Improved map and scene navigation with gamepad support", includes a thumbnail of a game controller over a globe and a "Read this article" button. The second post, "ArcGIS API 4.9 for JavaScript: What's new (September 2018)", includes a thumbnail of a 3D city model and a "Read this article" button. At the bottom, there's a search bar for the ArcGIS Blog.

ArcGIS Blog

MAPPING AND VISUALIZATION

Improved map and scene navigation with gamepad support

Multiple Authors | ArcGIS API for JavaScript | September 27, 2018

Use gamepad for an improved map and scene navigation experience.

Read this article

ANNOUNCEMENTS

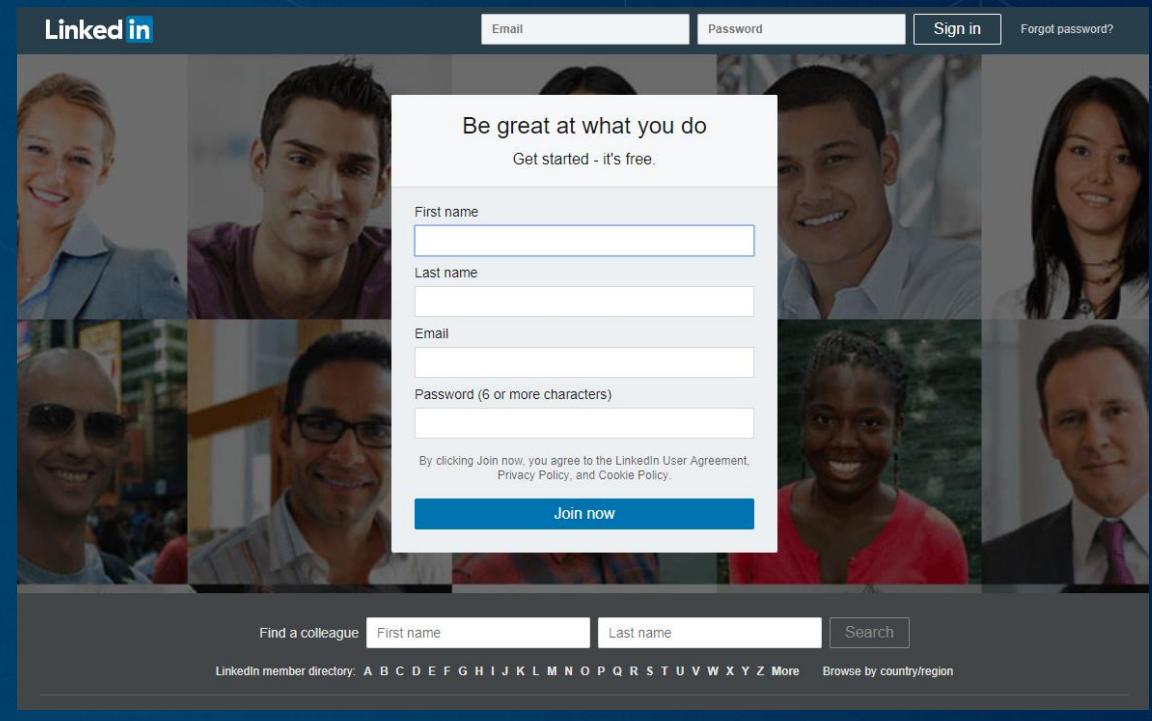
ArcGIS API 4.9 for JavaScript: What's new (September 2018)

Julie Powell | ArcGIS API for JavaScript | September 27, 2018

What's New in the ArcGIS API for JavaScript (September 2018), version 4.9

Read this article

Search ArcGIS Blog



The LinkedIn homepage features a dark header with the LinkedIn logo and navigation links: Email, Password, Sign in, and Forgot password?. Below the header, there's a "Be great at what you do" call-to-action with a "Get started - it's free." button. To the right, there are several user profile pictures. At the bottom, there's a "Join now" button and a search bar for finding colleagues.

LinkedIn

Email Password Sign in Forgot password?

Be great at what you do

Get started - it's free.

First name

Last name

Email

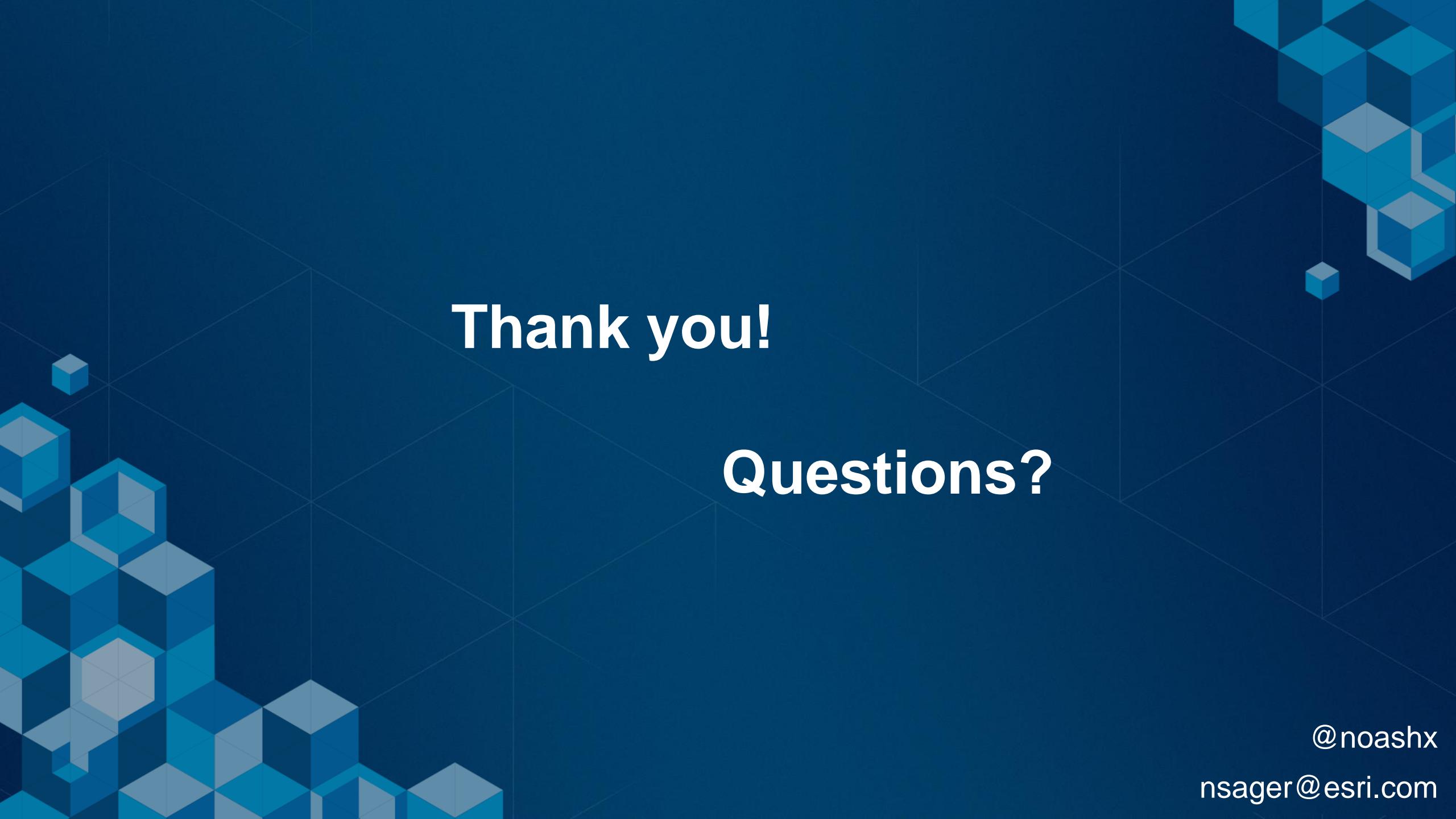
Password (6 or more characters)

By clicking Join now, you agree to the LinkedIn User Agreement, Privacy Policy, and Cookie Policy.

Join now

Find a colleague First name Last name Search

LinkedIn member directory: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z More Browse by country/region



Thank you!

Questions?

@noashx

nsager@esri.com