

# Using GIS Technology for Social Impact

University of Southern California

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Noah Sager

Product Engineer | ArcGIS API for JavaScript | Esri

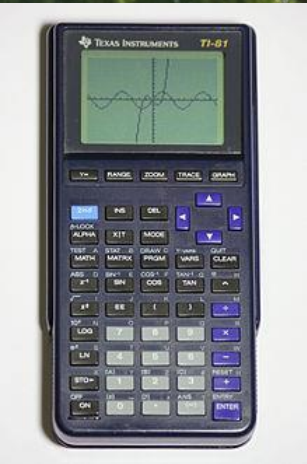
@noashx

nsager@esri.com

# Agenda

1. Who am I?
2. What are we talking about?
3. GIS apps
4. A tad o' data
5. Career Opportunities





**Bring On the Papers!**  
Esri UC Call for Papers Closes October 26

Do you have a GIS story to change the world? Can your insights

"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.)





# 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.



<https://developers.arcgis.com>

ArcGIS for Developers

 Dashboard 

[Get Started](#)

[Documentation](#)

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Noah



A complete mapping  
and analytics  
platform for  
developers

 [View Dashboard](#)

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# 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**

Browser/Web

**Android**

Mobile

**iOS**

**Java**

Desktop

**.NET**

Windows

**Qt**

Embed

Cross-Platform

**Python API**

Scripting

**REST API**

Any connected app  
Communicate w/ Server





The background is a dark blue field with a faint, light blue grid of lines forming a perspective of a floor. Scattered across the corners are clusters of 3D cubes in various shades of blue, some appearing to float or be part of a larger structure.

**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



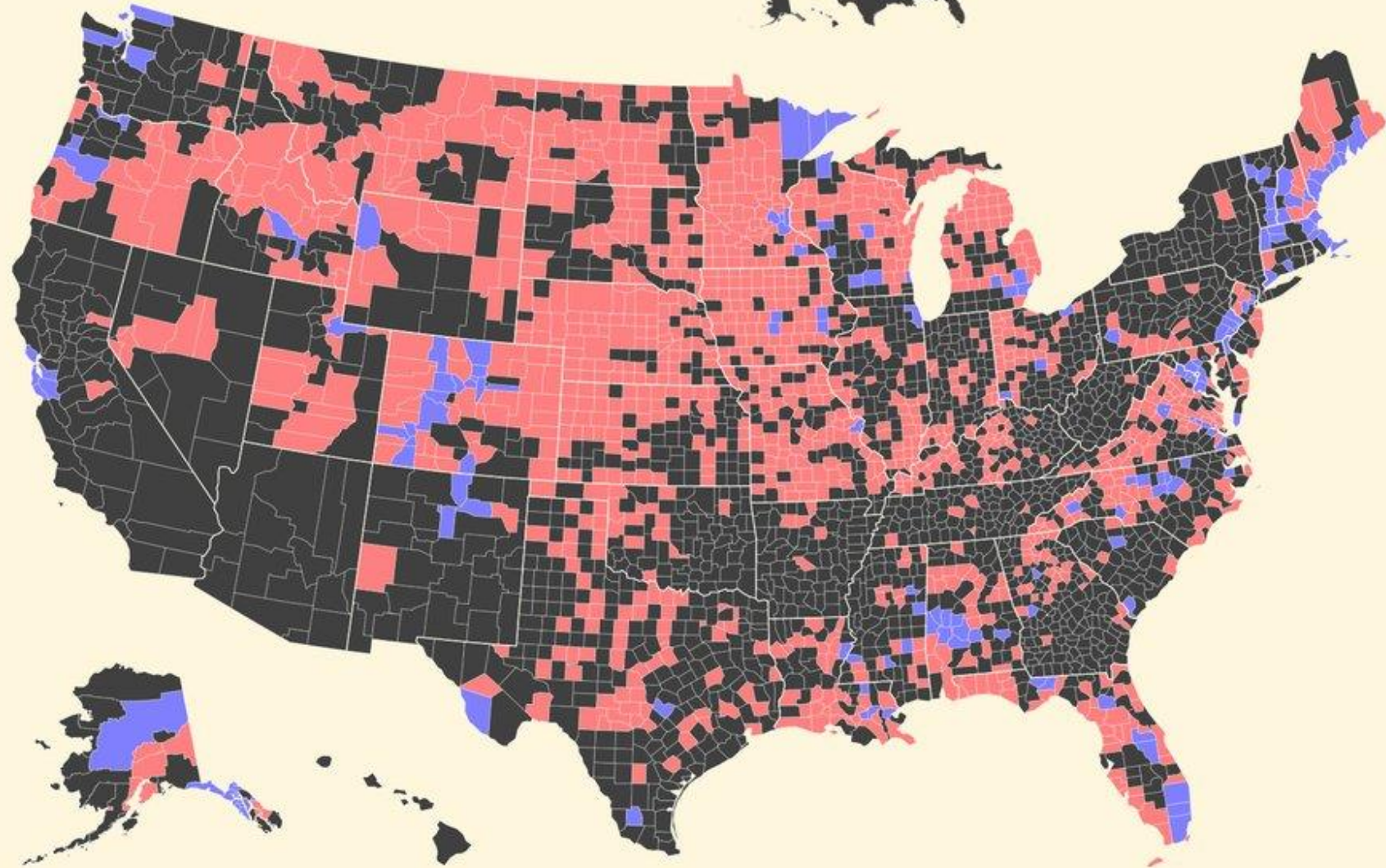
North Shore Rescue says a tourist using a faulty trail map app on his phone was led astray into danger Monday evening.

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"







GATOR

Find address or place



Legend

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

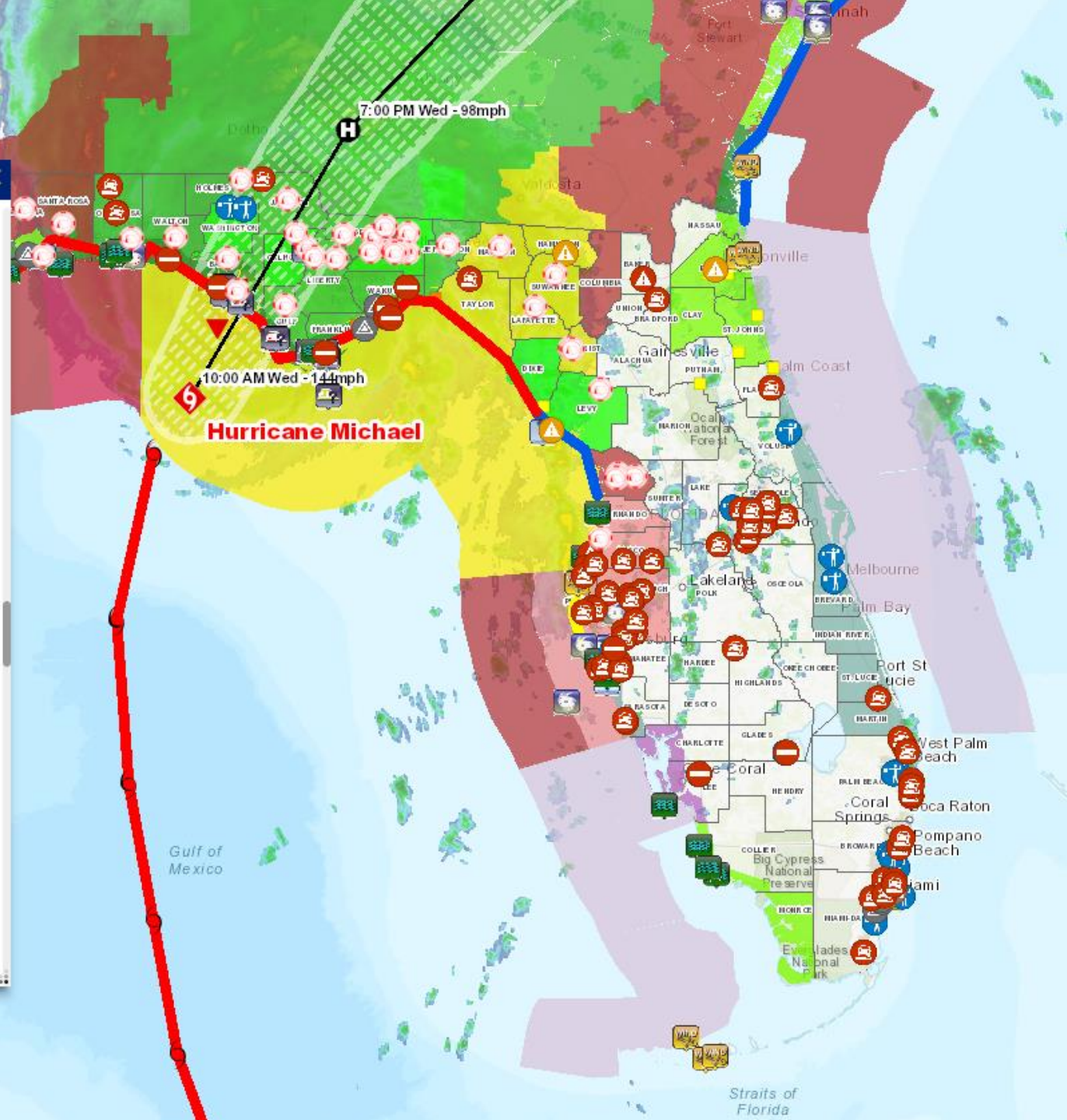
Past Track

- Post-Tropical Cyclone
- Wave
- Disturbance
- Low
- Sub-Tropical Depression
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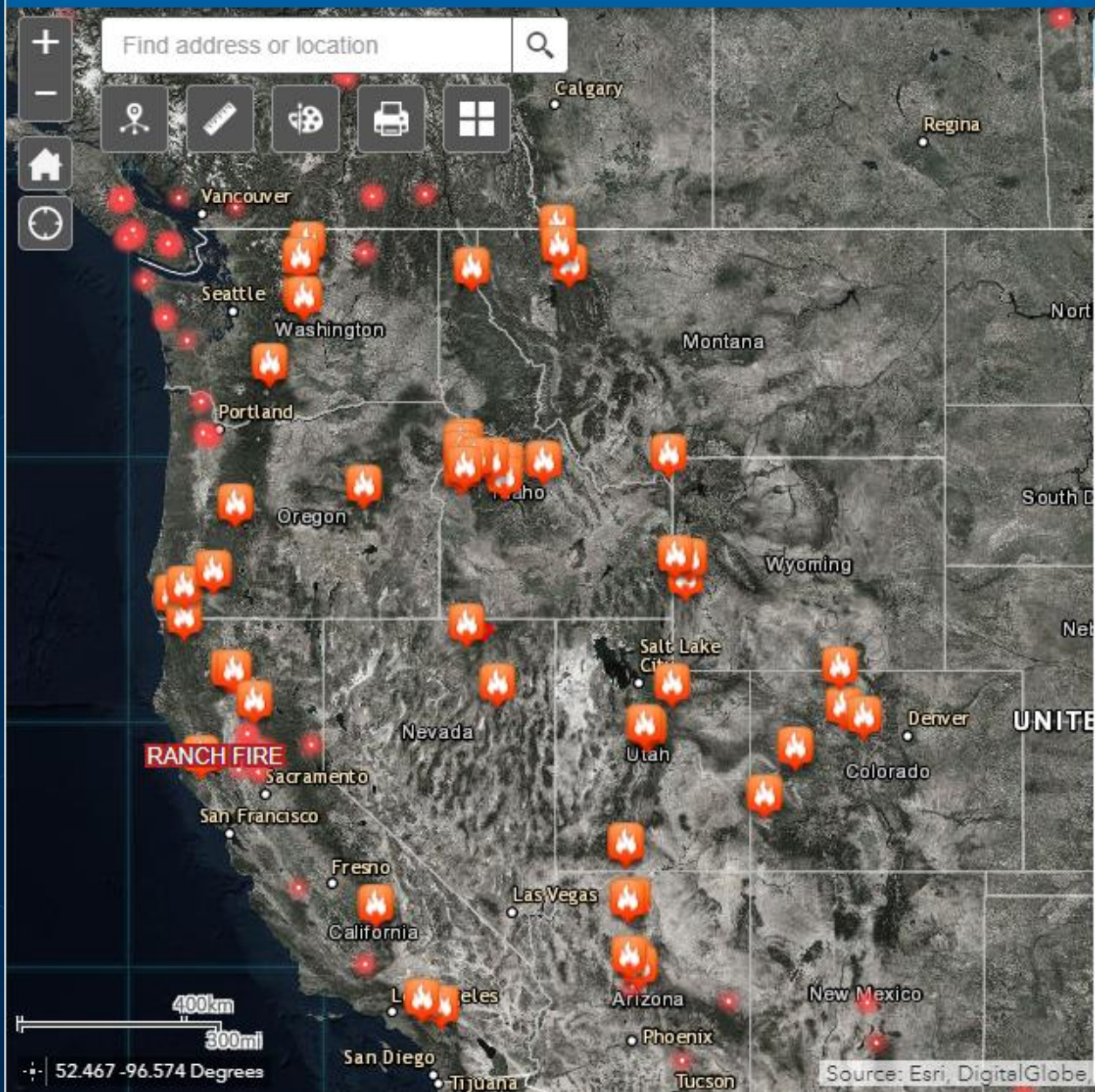
River Conditions

Currently Flooding (Florida)

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







## 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

Exercise

Quit Drinking

Earn More Money

Education

Family

Quit Smoking

Vacation

Volunteer/Donate

God/Jesus Pray

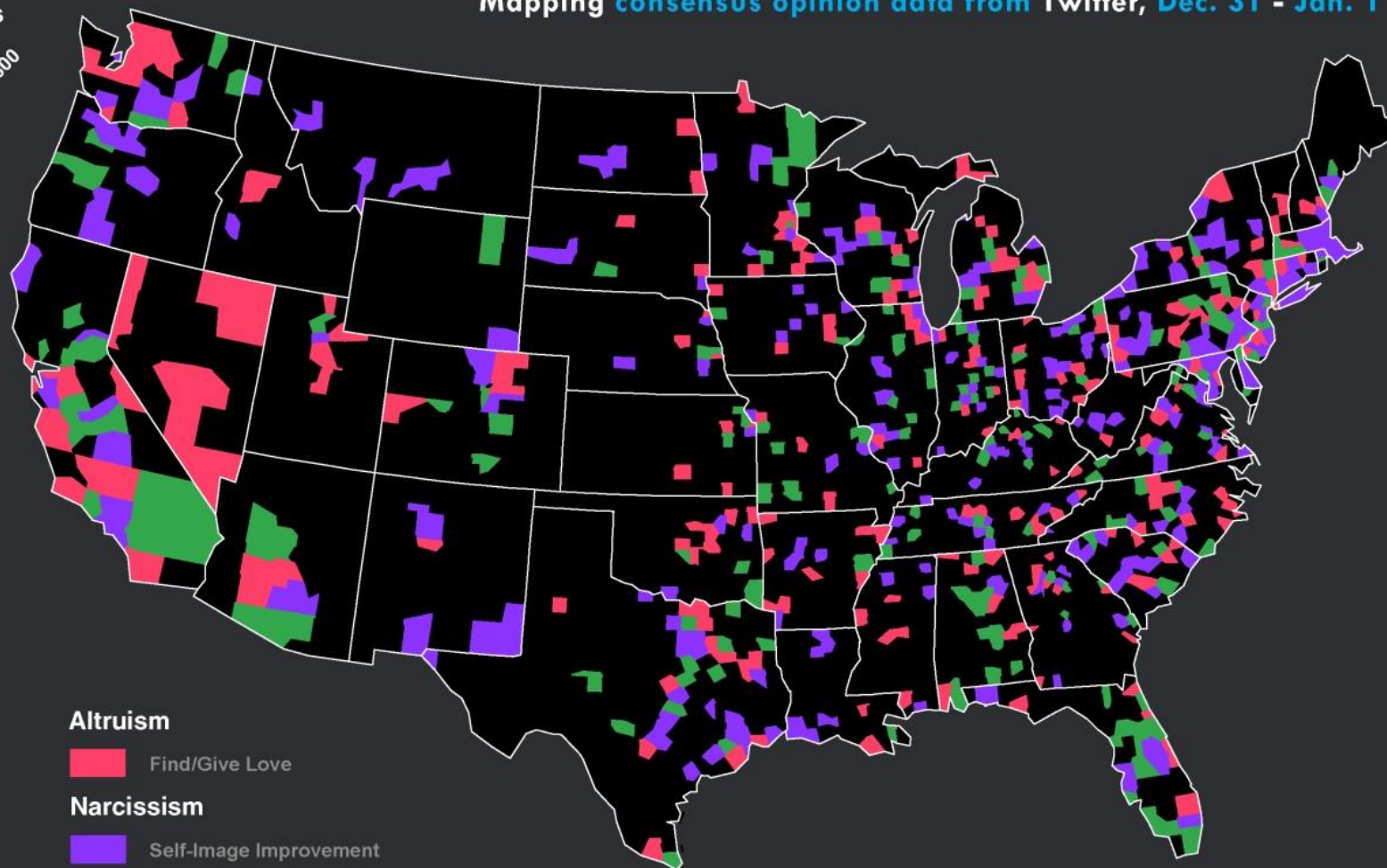
## Altruism

Find/Give Love

## Narcissism

Self-Image Improvement

Self-Value Improvement



Map & Graphics  
By Chris Cantey

[myweb.space.wisc.edu/ccantey/web/](http://myweb.space.wisc.edu/ccantey/web/)

# ArcGIS API for JavaScript

The background is a dark blue gradient with a faint, light blue grid of hexagons. In the bottom-left and top-right corners, there are clusters of 3D blue cubes of varying sizes, some of which are slightly offset, creating a sense of depth and a modern, technological aesthetic.



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

ArcGIS for Developers

Dashboard + ▾


Get Started

Documentation

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 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](#)

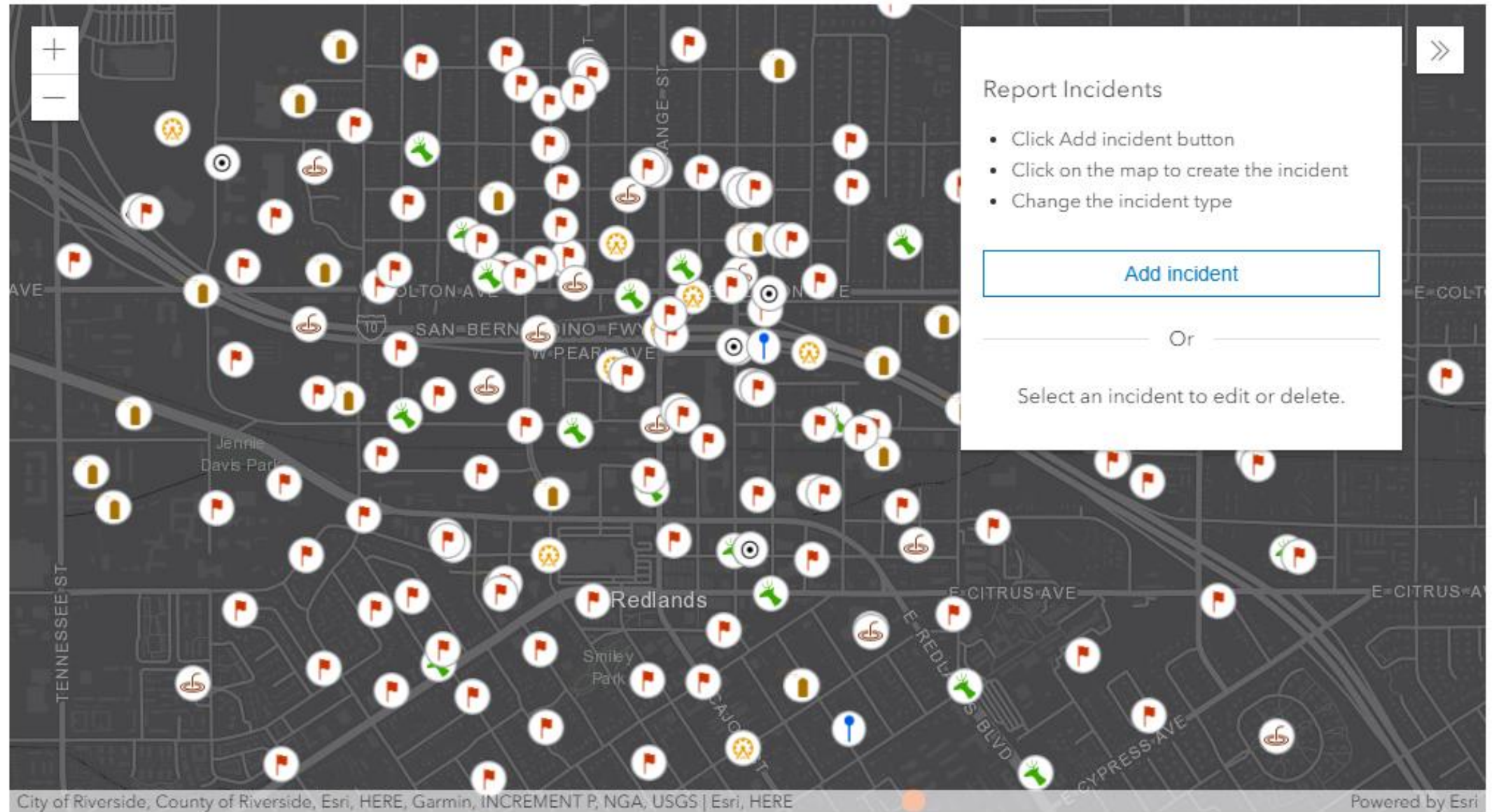
## Explore all the ArcGIS DevLabs

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

All Products	 JavaScript	 Android	 iOS	 .NET NET	 Qt	All Topics	 Maps & Layers	 Styling & Visualization	 Query & Edit	 Geocoding
 Java	 macOS	 ArcGIS Online	 REST API	 Python	 Pro SDK	 Routing	 Spatial Analysis	 Demographics	 Manage Data	 Offline

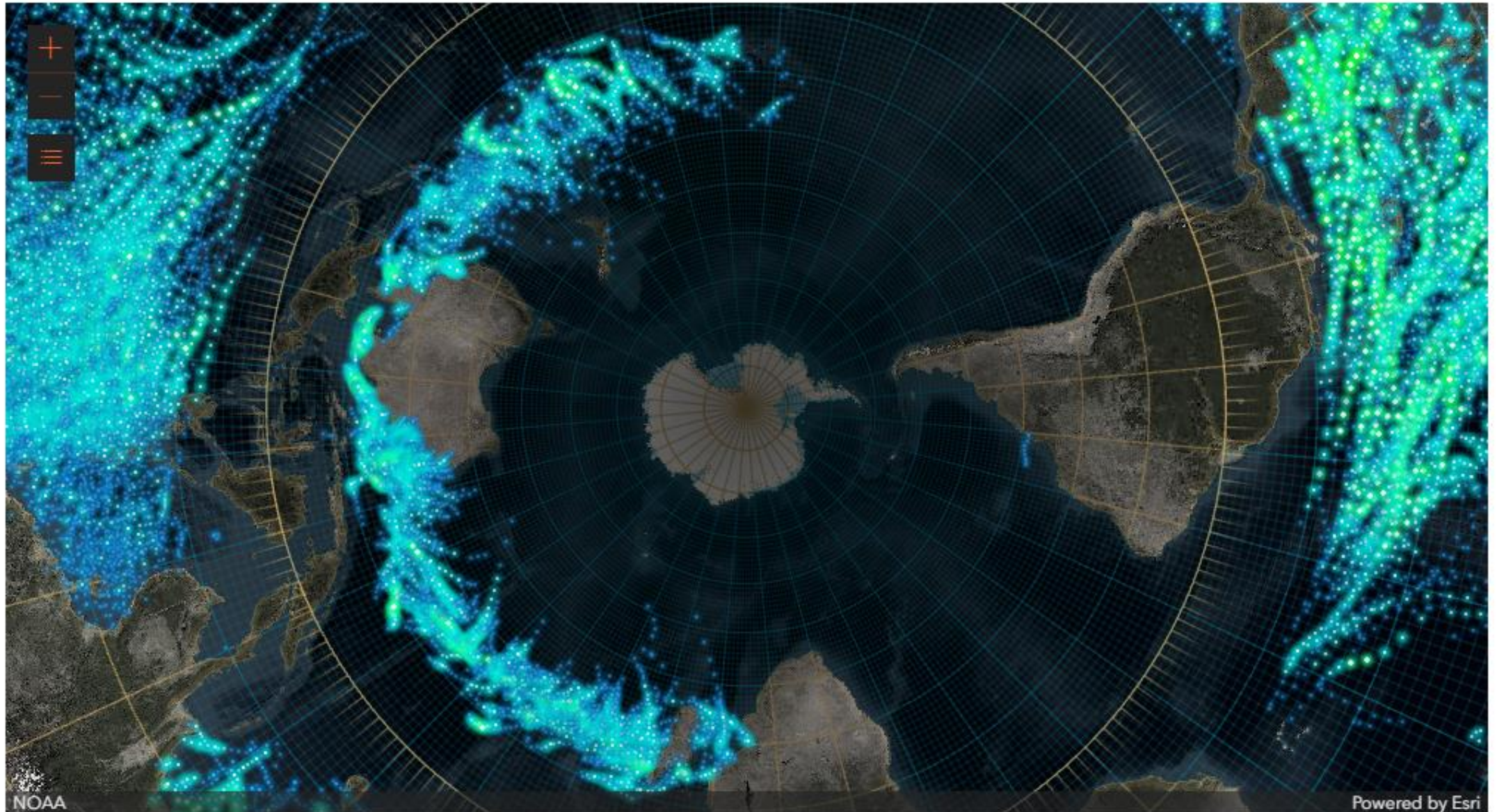


# Update FeatureLayer using applyEdits()



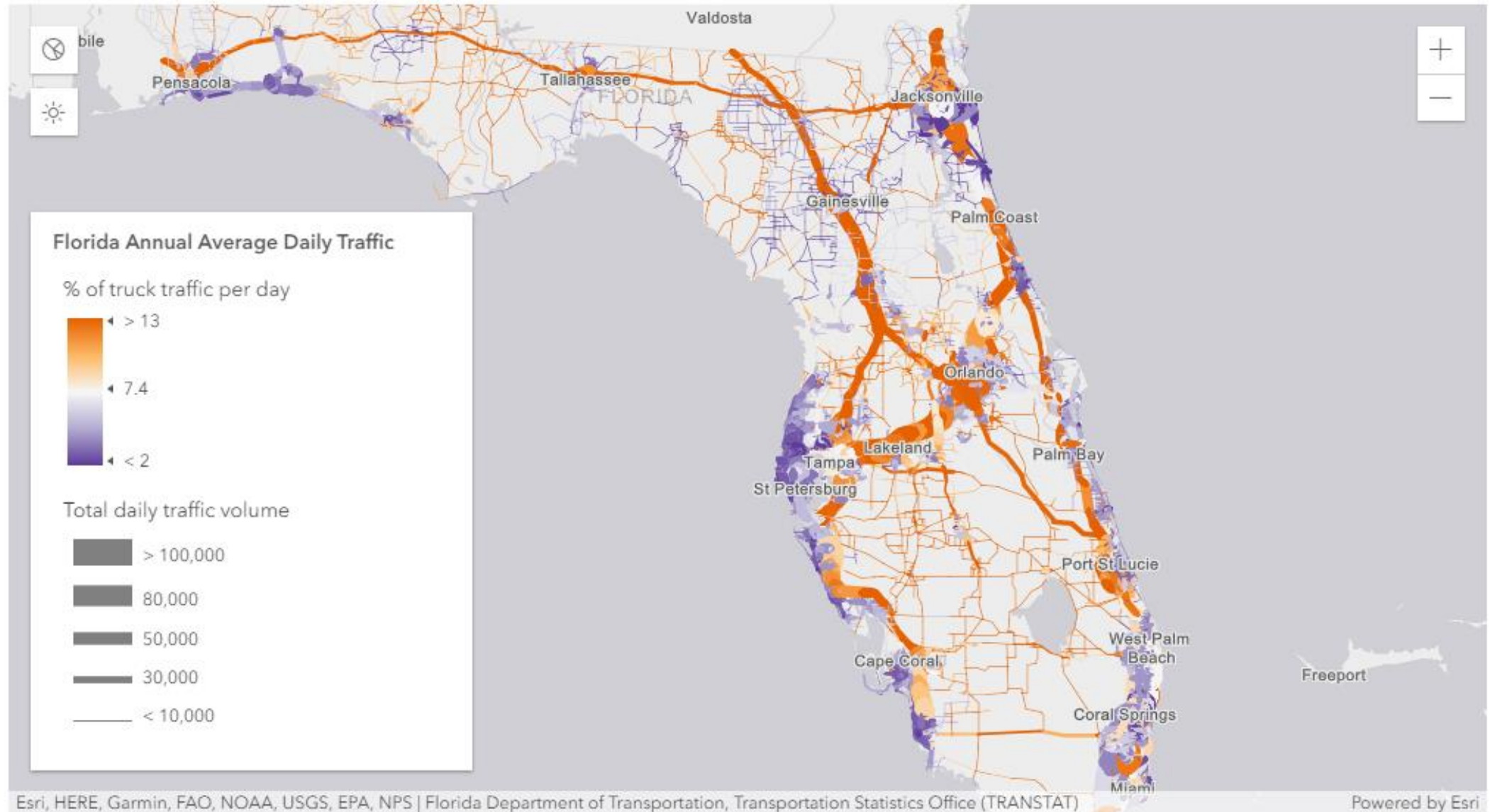


## CSVLayer - Project points on the fly

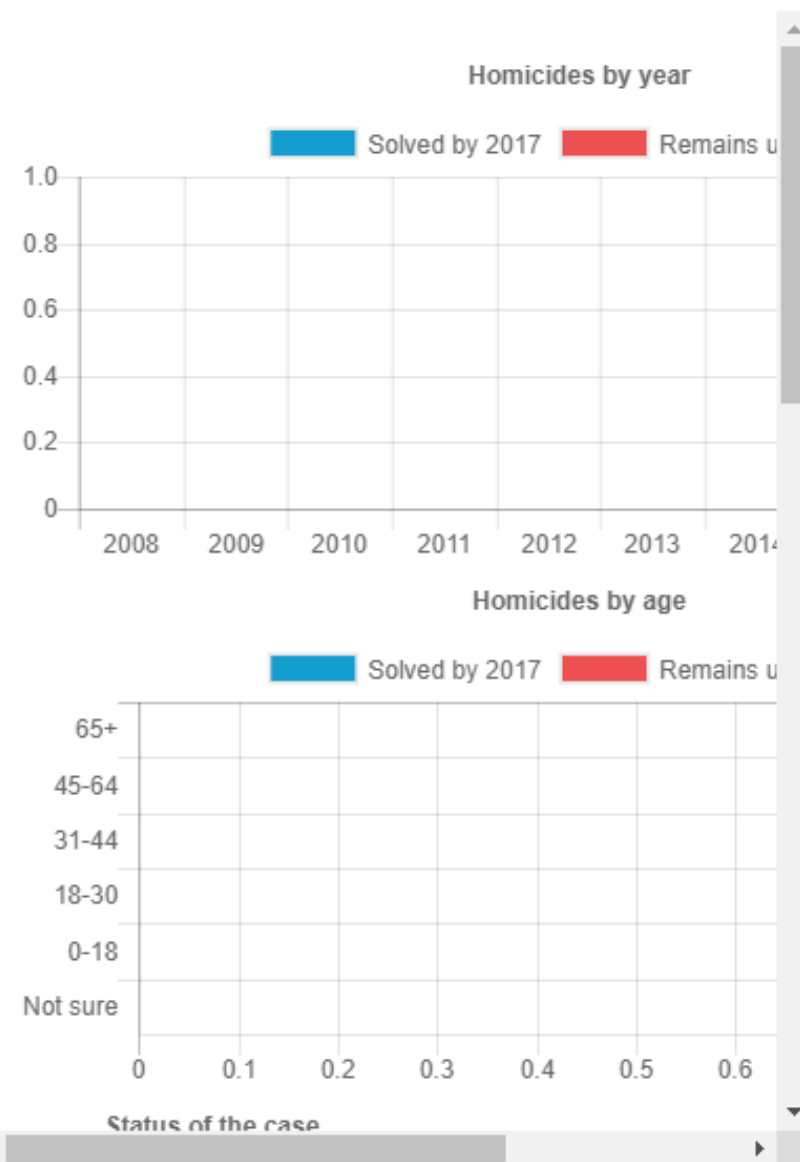
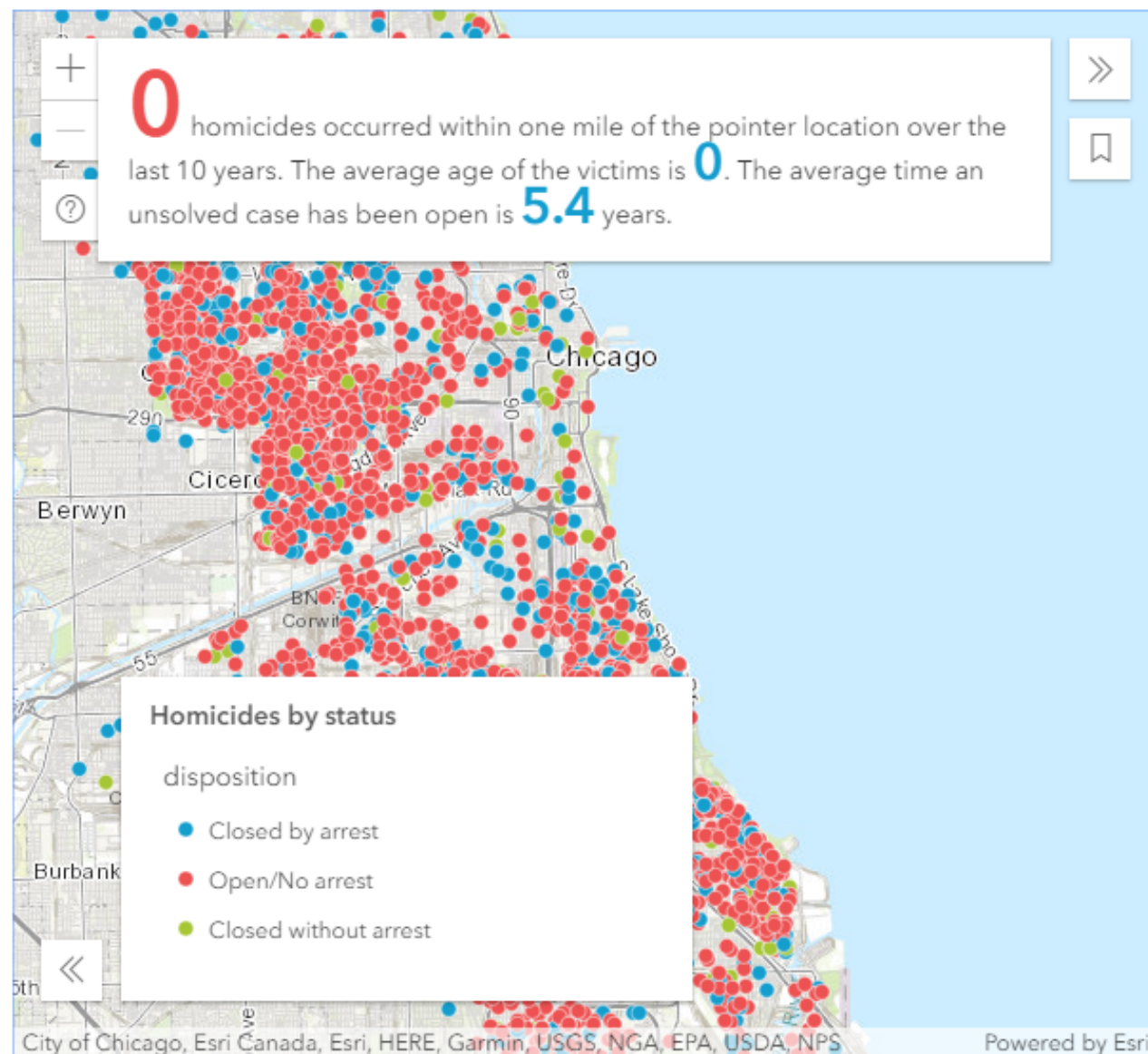




# Multivariate data exploration

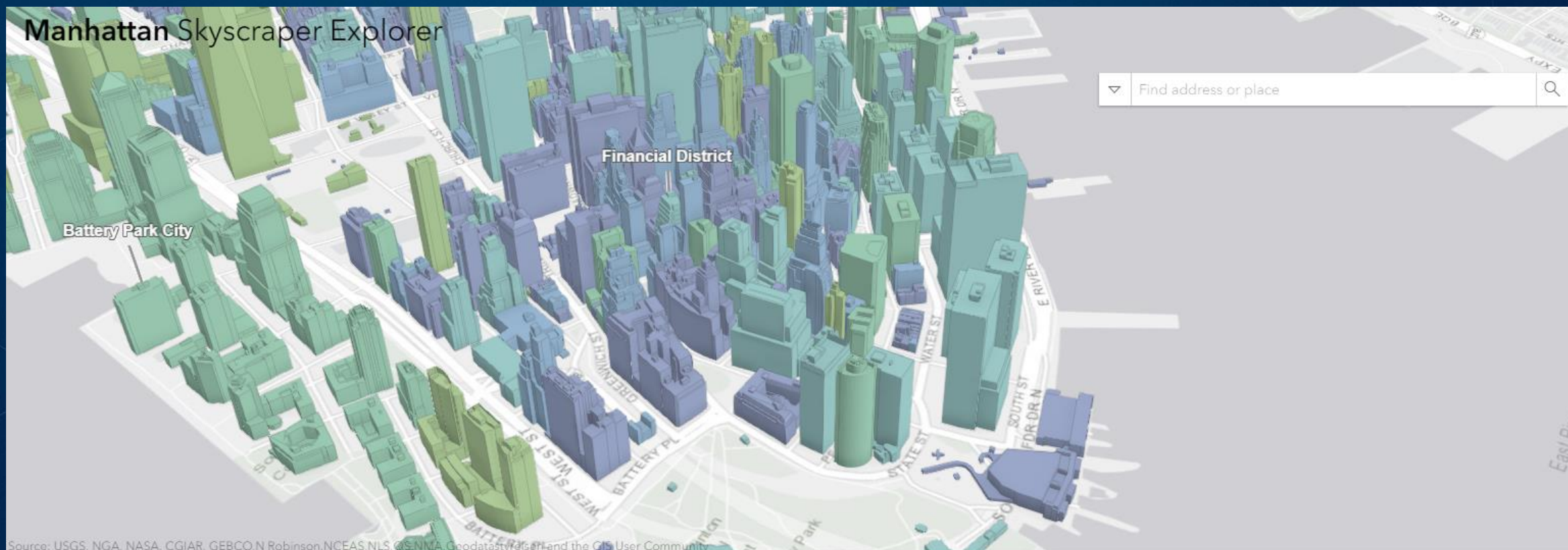


# Query statistics client-side by distance

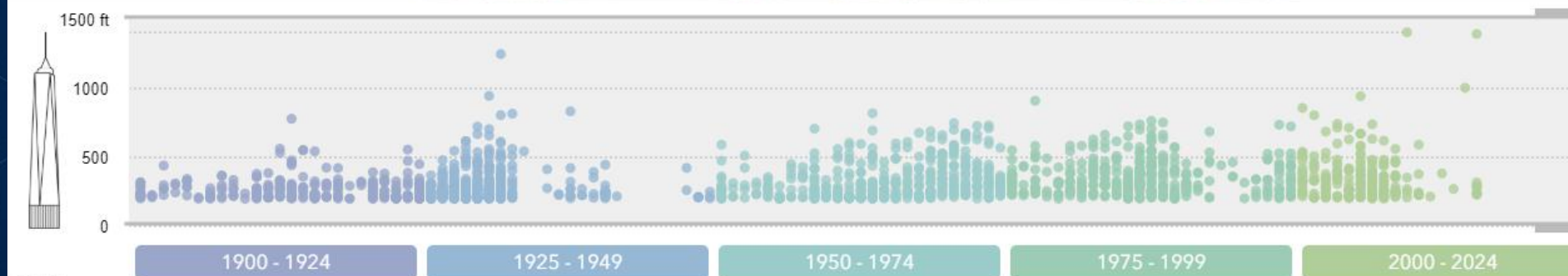




# Manhattan Skyscraper Explorer



Source: USGS, NGA, NASA, CGIAR, GEBCO, N Robinson, NCEAS, NLS, OSNMA, Geodatasty, Esri and the GIS User Community



Disclaimer

Show all buildings

Only annotated buildings

Top 20 buildings



App credit: Raluca Nicola - @nicolaraluk



San Francisco

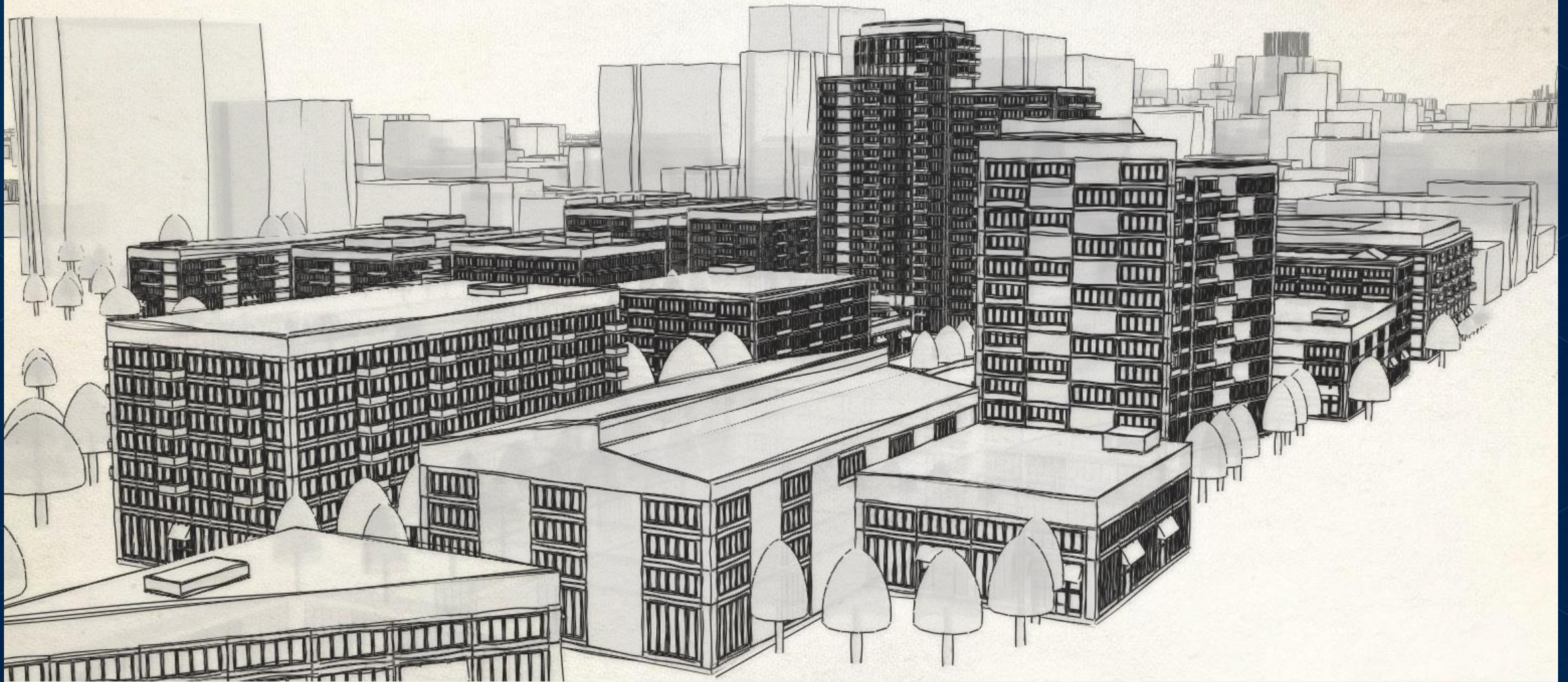
New York - Manhattan

Paris

Berlin

Washington D.C.

Chalk



Made with [ArcGIS API for JavaScript](#).  
Powered by Esri

App credit: Raluca Nicola - @nicolaraluk



Esri Leaflet

Tutorials

Plugins

Examples

API Reference

Download

View on GitHub

# Esri Leaflet

A lightweight set of tools for using ArcGIS  
services with Leaflet.

Examples

API Reference

Download

Terms

ArcGIS for Developers / **Web AppBuilder**

# 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

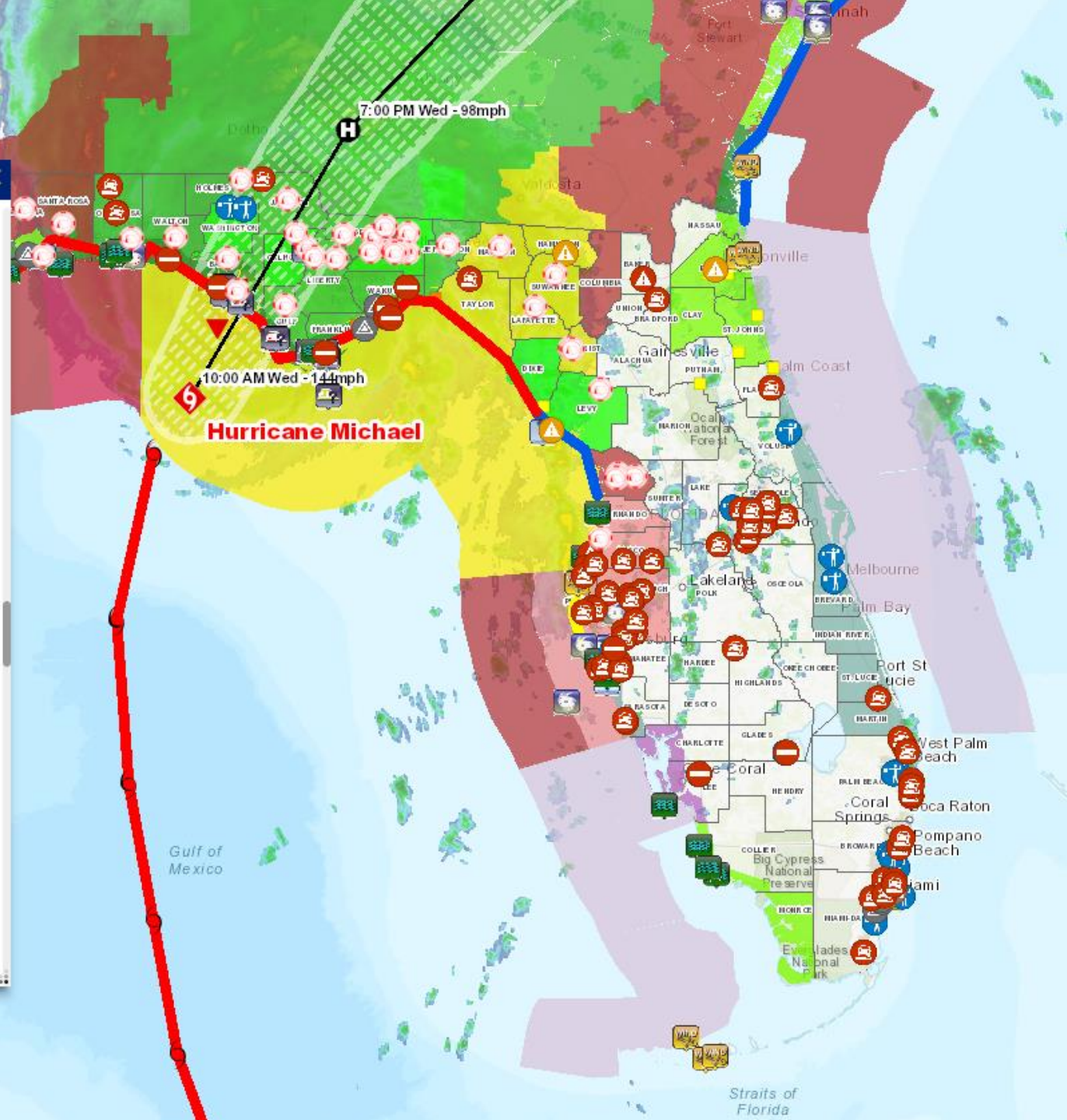
Past Track

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River Conditions

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- Low Threshold





# Configurable Apps & Templates



# ArcGIS Online

Configurable Apps

App Templates

Story Maps

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. ?

Search



Basic Viewer



Compare



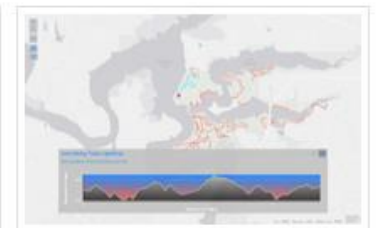
Crowdsourcing Polling



Directions



Edit



Elevation Profile



Cancel

# Create a web app



What do you want to do?

Select a configurable app. ?

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Map Social Media

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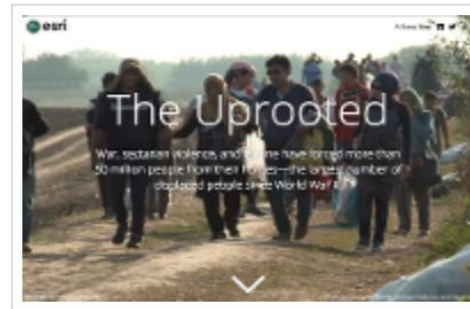
Route/Get Directions

Showcase a Map

Combine maps with narrative text, images, and multimedia content to tell your story



Story Map Basic



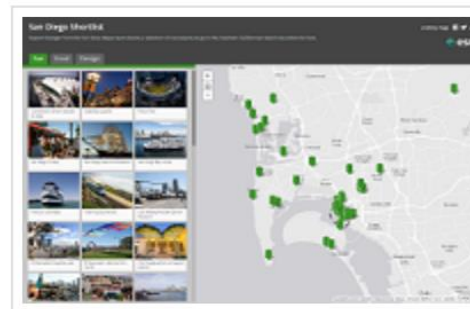
Story Map Cascade



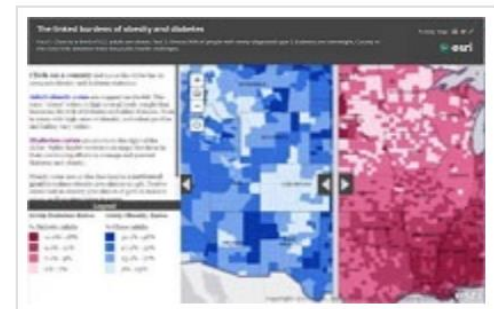
Story Map Journal



Story Map Series



Story Map Shortlist



Story Map Swipe and Spyglass



The background is a solid dark blue color. Overlaid on this are several geometric elements: a faint, light blue grid of lines that create a perspective effect, and clusters of 3D cubes in various shades of blue (light, medium, and dark). These cubes are arranged in a way that suggests depth and data points, with some appearing to float or be part of larger structures. The overall aesthetic is modern and technological.

# Data

# What can you add to ArcGIS Online?

If you have [privileges](#) to create content, you can add many different types of content as items to ArcGIS Online. You can add most item types through **Content > My Content > [Add Item](#)**. Other types of items, such as a web map item, are automatically added to ArcGIS Online when you create and save them through a related app or workflow—for example, creating a map in Map Viewer.

You can upload files up to 200 GB to **My Content** through a web browser.





Datasets Topics ▼ Groups About ▼ State Portals Civic Engagement Documentation ▼

# Welcome to California Open Data

California believes in the power of unlocking government data. We invite all to search and explore our open data portal and engage with our data to create innovative solutions. We believe the California open data portal will bring government closer to citizens and start a new shared conversation for growth and progress in our great state.

<https://data.ca.gov/>

# Los Angeles GeoHub

LA Metro Bus Routes

The GeoHub is the City's new public platform for exploring, visualizing, and downloading location-based Open Data. You can also analyze and combine Open Data layers using maps, as well as develop new web and mobile applications. Let's make our great City even better, together!

## Find Data



<https://geohub.lacity.org/>





Sign In



## ArcGIS Living Atlas of the World

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Apps

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The ArcGIS Living Atlas of the World is the foremost collection of geographic information from around the globe. It includes maps, apps, and data layers to support your work.

Search Living Atlas content



<https://livingatlas.arcgis.com/en/>

# Career Opportunities

The background is a dark blue gradient with a subtle geometric pattern of thin white lines forming a grid of triangles. In the bottom-left and top-right corners, there are clusters of 3D cubes in various shades of blue, some appearing to float or be part of a larger structure.



<https://www.esri.com/en-us/about/careers/student-jobs>



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



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## Esri Young Professionals Network

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







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 Redlands, CA

 [developers.arcgis.com](https://developers.arcgis.com)

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Tweets

Tweets & replies

Media



**Esri GeoDev** @EsriGeoDev · 20h

Our first presentation for tonight's [#GeoDev](#) [#Meetup](#) in [#Portland](#) [#Maine](#): Designing for enterprise- an Esri case study by Steven Nelson - UX/UI Manager - Software and Dawit Elias- UX architect (Android) [#UXUI](#)



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

 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.



### 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](https://www.esri.com/nonprofit)

Joined July 2015

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☎\* 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

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[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

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[ArcGIS Engine](#)

[ArcGIS Engine for Linux](#)

### Desktop SDKs

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

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

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

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

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

### Web AppBuilder for ArcGIS (Developer Edition)

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

### Scripting and Automation

---

[ArcGIS Python API](#)





# Geomentoring





# Hackathons





# Outreach







# Learn ArcGIS Your Way

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



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Class Schedule



About Us

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



# 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...

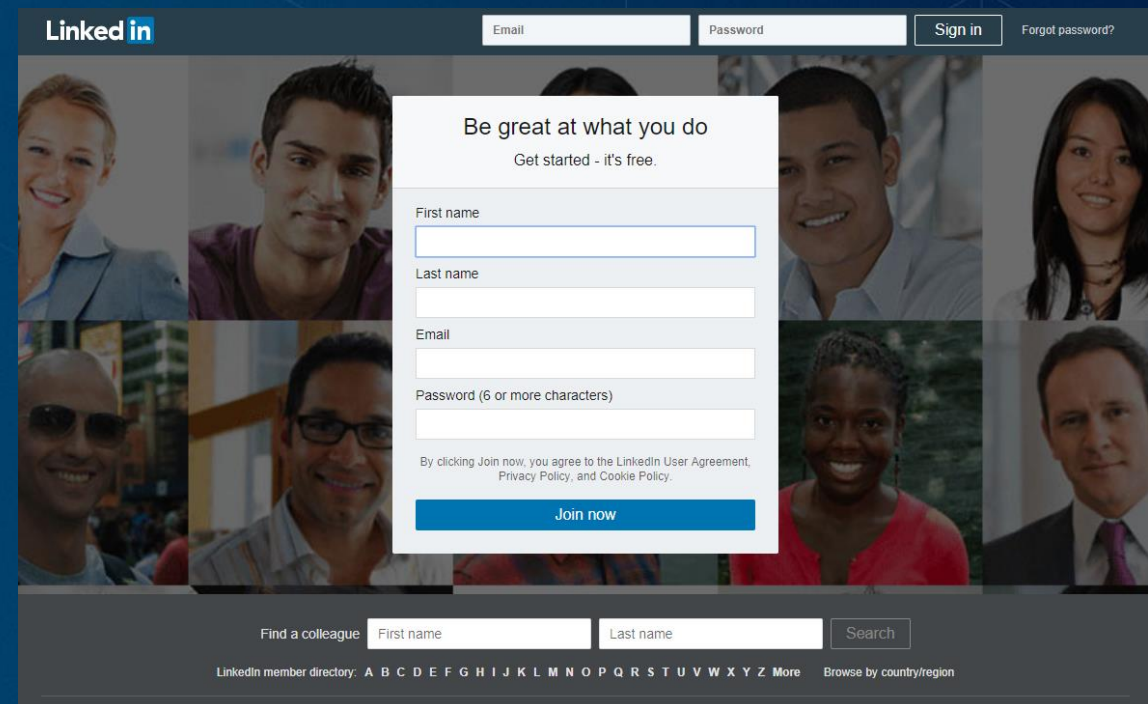
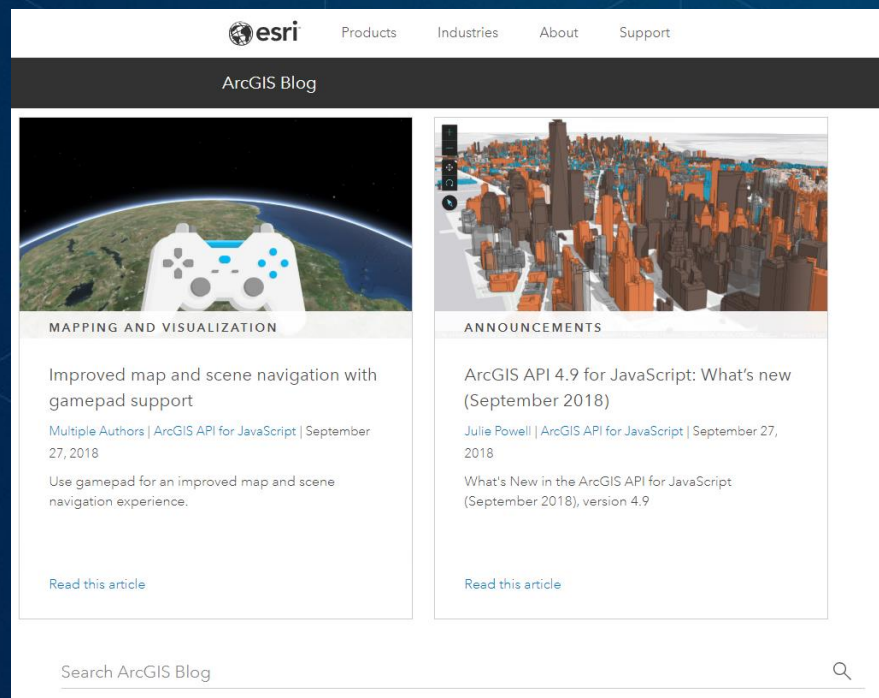
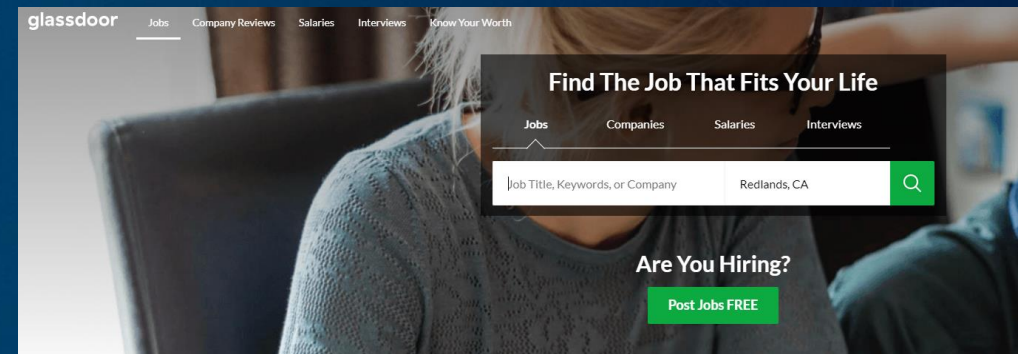
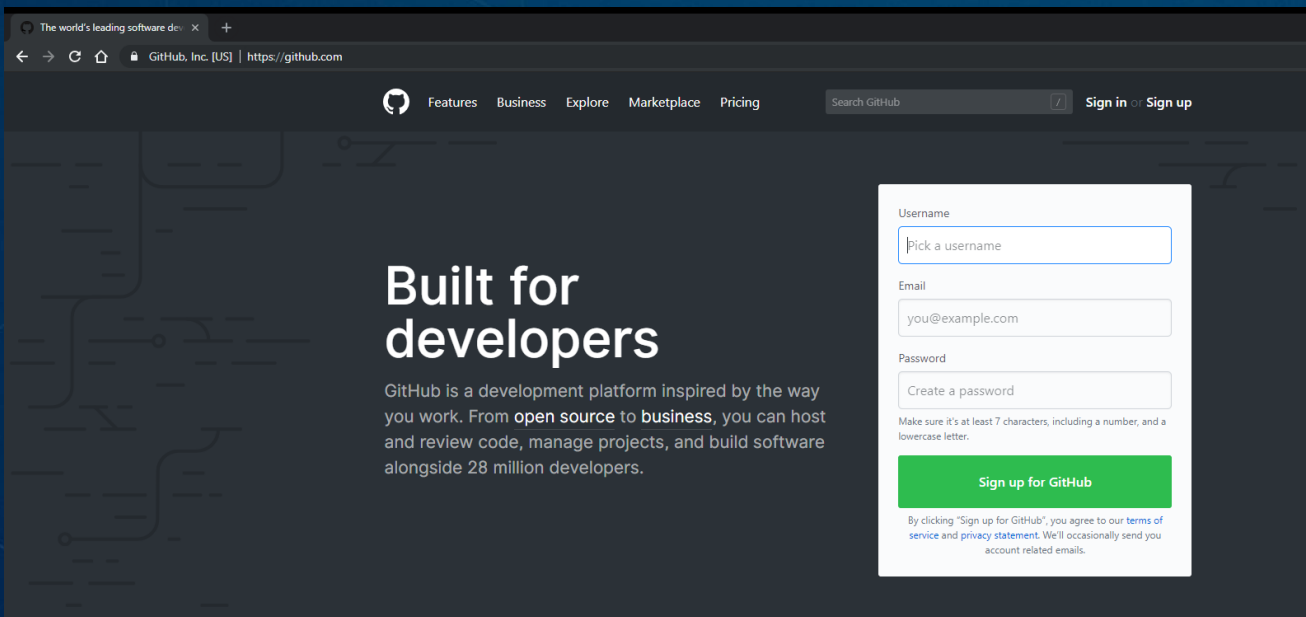
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SCIENCE  
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WHERE**

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



# Unsolicited Advice





The background is a dark blue gradient with a faint, light blue grid of hexagons. In the corners, there are clusters of 3D blue cubes of varying sizes, some of which are slightly offset from the grid lines, creating a sense of depth and a modern, technological aesthetic.

**Thank you!**

**Questions?**

@noashx

nsager@esri.com