

esri

# Working with Location Services with ArcGIS REST JS

Allison Davis, Noah Mulfinger, Gavin Rehkemper, Jacob Wasilkowski

@araedavis, @noahmulfinger, @gavinr, @jwasilgeo

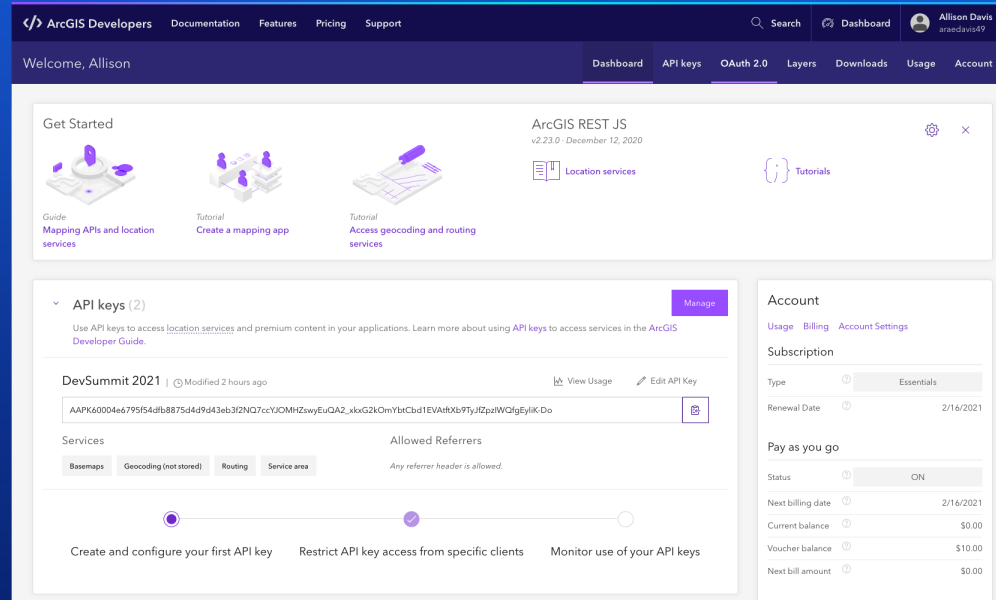
Slides: [esriurl.com/ds21rest](https://esriurl.com/ds21rest)

2021 ESRI  
DEVELOPER SUMMIT

# What's REST JS?

- Access ArcGIS location services, ArcGIS Online and ArcGIS Enterprise REST APIs
- Docs at [developers.arcgis.com/arcgis-rest-js](https://developers.arcgis.com/arcgis-rest-js)
- REST JS is open source!

# Before we begin: API Keys



The screenshot shows the ArcGIS Developers dashboard for user Allison Davis. The main navigation bar includes links for Documentation, Features, Pricing, and Support. The dashboard is titled "Welcome, Allison" and features a "Get Started" section with guides and tutorials for Mapping APIs, creating mapping apps, and geocoding/routing services. The "API keys (2)" section is highlighted, showing a key for "DevSummit 2021" with a "Manage" button. Below the key, there are tabs for "Services" (Basemaps, Geocoding, Routing, Service area) and "Allowed Referrers" (Any referrer header is allowed). A progress bar at the bottom indicates three steps: "Create and configure your first API key", "Restrict API key access from specific clients", and "Monitor use of your API keys". The right sidebar contains "Account" information, including a "Subscription" table with columns for Type, Renewal Date, and Status, and a "Pay as you go" section with a table showing billing details.

Type	Renewal Date	Status
Essentials	2/16/2021	ON

Next billing date	Current balance	Voucher balance	Next bill amount
2/16/2021	\$0.00	\$10.00	\$0.00

- How to get an API Key
- Learn more about API Keys

# Geocoding



[esri.github.io/arcgis-rest-js/api/geocoding](https://esri.github.io/arcgis-rest-js/api/geocoding)

# Geocoding

- geocode
- suggest
- bulk geocode
- reverse geocode

Learn more about the geocoding service



# Find an address

```
ES Modules ▾ Copy  
  
import { ApiKey } from "@esri/arcgis-rest-auth";  
import { geocode } from "@esri/arcgis-rest-geocoding";  
  
const apiKey = "YOUR-API-KEY";  
  
const authentication = new ApiKey({  
  key: apiKey  
});  
  
geocode({  
  address: "1600 Pennsylvania Ave",  
  postal: 20500,  
  countryCode: "USA",  
  authentication  
}).then((response) => {  
  console.log("Candidates:", response.candidates);  
});
```

- IGeocodeOptions
- Full tutorial and code



# Place search

```
geocode({
  params: {
    category: "Coffee shop",
    location: "144.9850916862488,-37.798297645411",
    distance: 2000,
    maxLocations: 20
  },
  outFields: "*",
  authentication
}).then((response) => {
  console.log("Candidates:", response.candidates);
});
```

- Full tutorial and code
- Learn more about place search

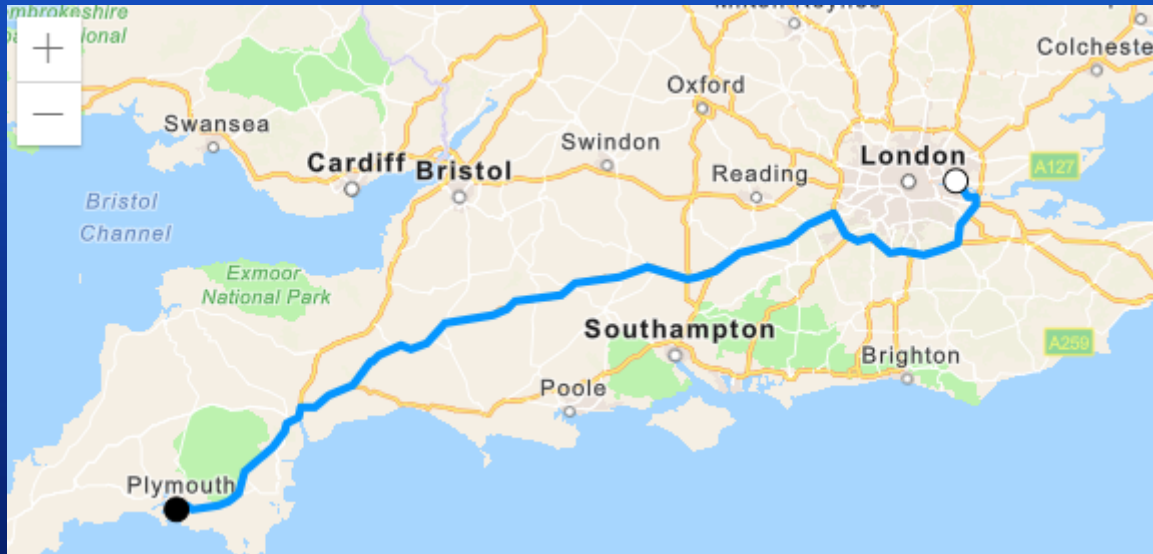
# Geocoding

## Demo

- REST JS: request, auth, geocoding packages
- React
- Downshift



# Routing



[esri.github.io/arcgis-rest-js/api/routing](https://esri.github.io/arcgis-rest-js/api/routing)

# Routing

- Basic: Solve Route
- Others:
  - Closest Facility
  - Service Area
  - Travel Cost Matrix

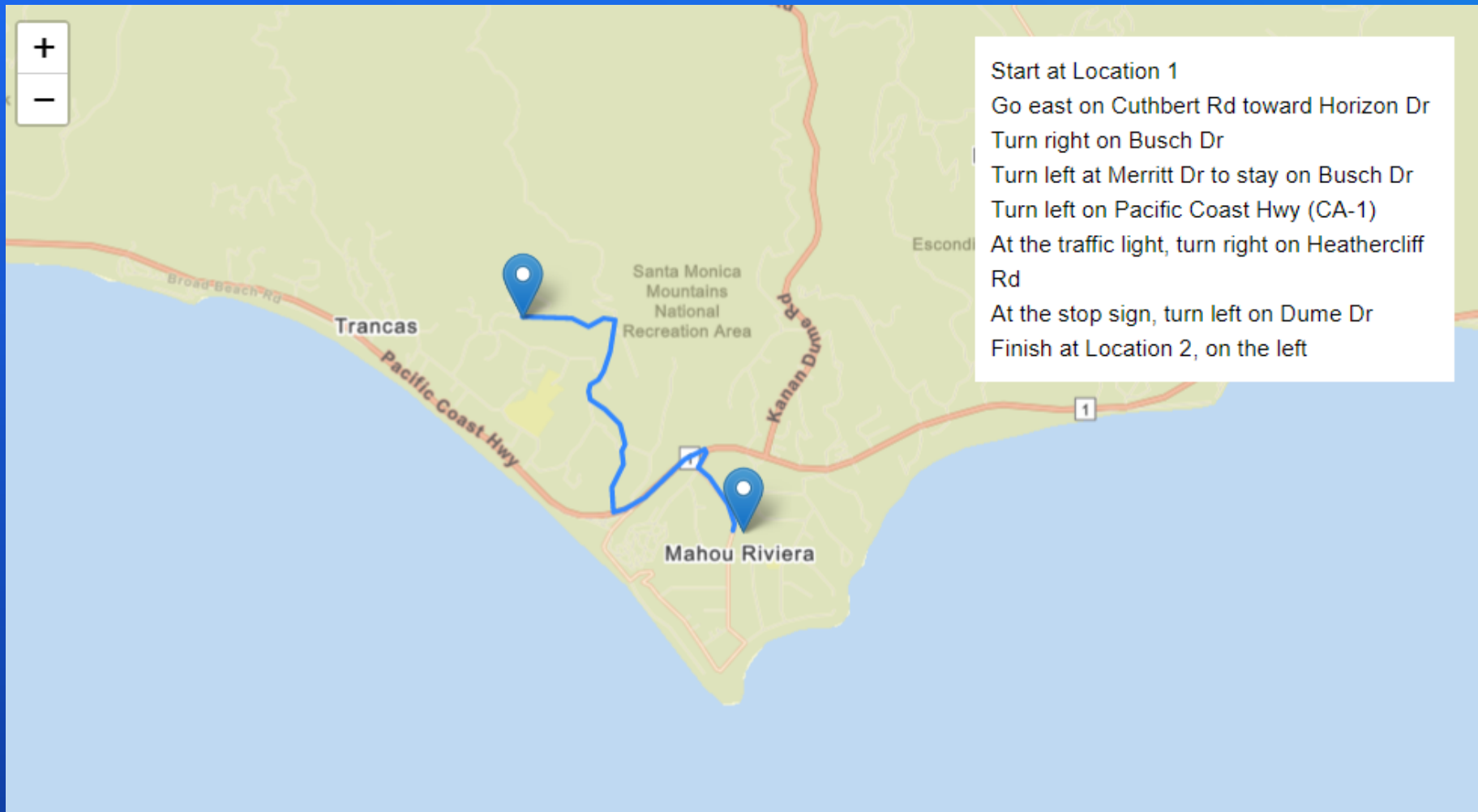
# Routing: Solve Route

```
const authentication = new ApiKey({
  key: apiKey // from https://developers.arcgis.com
});

solveRoute({
  stops: [
    [-117.195677, 34.056383],
    [-117.918976, 33.812092]
  ],
  authentication
}).then((response) => {
  console.log(response);
});
```

Live Demo

# Routing: With Leaflet



Live Demo



# Feature Layers

- ▼ feature-layer
  - ▶ getLayer
  - ▶ updateAttachment
  - ▶ applyEdits
  - ▶ decodeValues
  - ▶ deleteFeatures
  - ▶ deleteAttachments
  - ▶ getAttachments
  - ▶ addAttachment
  - ▶ getService
  - ▶ addFeatures
  - ▶ getFeature
  - ▶ queryFeatures
  - ▶ queryRelated
  - ▶ updateFeatures

Functions for

- querying features
- editing features




... in hosted feature layers

[esri.github.io/arcgis-rest-js/api/feature-layer/](https://esri.github.io/arcgis-rest-js/api/feature-layer/)



# Feature Layers

Usage examples 

- Not using any JS maps
  - Website user forms , non-spatial charts 
- Extending JS map libraries 
- Nightly feature data updates with Node.js

# Query a feature layer

```
1 import {
2   queryFeatures
3 } from "@esri/arcgis-rest-feature-layer";
4
5 queryFeatures({
6   url: "https://services3.arcgis.com/GVgbJbqm8hXASVYi/arcgis/r
7   where: "UseType = 'Residential'"
8 }).then((response) => {
9   console.log(response.features);
10 });
```

<https://developers.arcgis.com/arcgis-rest-js/layers/query-a-feature-layer-sql/>

# Edit feature data


```
1 import {
2   addFeatures,
3   updateFeatures,
4   deleteFeatures
5 } from "@esri/arcgis-rest-feature-layer";
6
7 addFeatures({
8   url: featureServiceLayerUrl,
9   features: [featureToAdd]
10 }).then((response) => console.log(response));
11
12 // similarly:
13 // updateFeatures()
14 // deleteFeatures()
```


<https://developers.arcgis.com/arcgis-rest-js/layers/edit-feature-data/>

# Svelte app & editing feature data



```
{
  "attributes": {
    "name": "editing test",
    "rating": "2"
  },
  "geometry": {
    "x": -118.807,
    "y": 34.002,
    "spatialReference": {
      "wkid": 4326
    }
  }
}
```

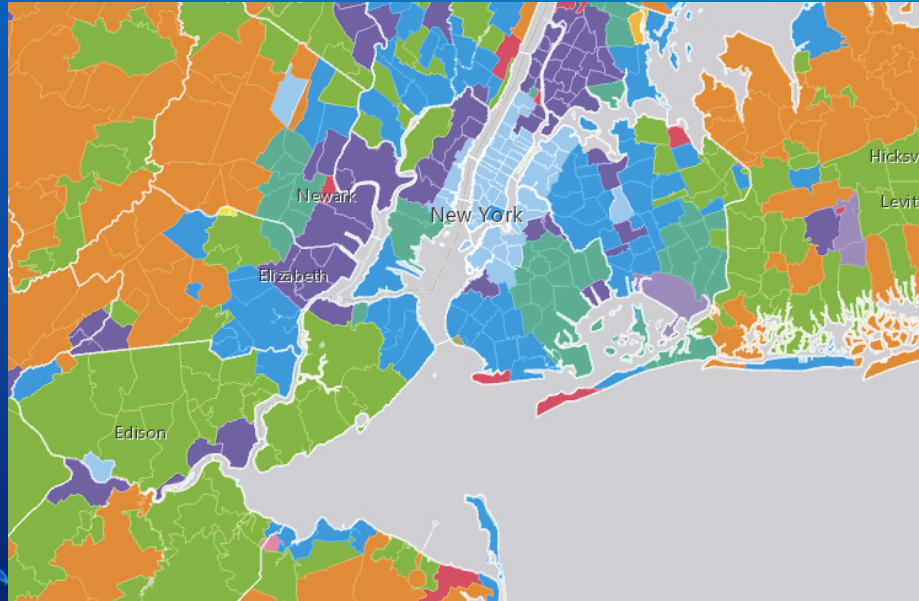
 1. Add new feature

 2. Update it

 3. Delete it

Live Demo


# Demographics



[esri.github.io/arcgis-rest-js/api/demographics/](https://esri.github.io/arcgis-rest-js/api/demographics/)



# New demographics package

- querying demographic data
  - finding available datasets
  - finding regional boundaries
  - typed API responses
- 



# Querying data

```
1 import {
2   queryDemographicData
3 } from "@esri/arcgis-rest-demographics";
4
5 queryDemographicData({
6   studyAreas: [{
7     geometry: { x: 0.1278, y: 51.5074 } // Long/Lat
8   }],
9   authentication: authentication
10 }).then(response => {
11   // Demographic data for 1 mile radius around point
12   console.log(response);
13 });
```

<https://developers.arcgis.com/arcgis-rest-js/demographic-data/query-demographic-data/>

# Using an API Key

Dashboard / API keys

Dashboard

API keys

OAuth 2.0

Layers

Downloads

Usage

Account

AAPKac812e9d60ac47f0945627beb076dcbfJ-gNCfqJXyhzuVwPP3wlPnc\_ePpGaFKrleLexmjLLxe-fmPavJo4KhOO84C\_PM9



## Location services

Configure services

Enable or disable location services that this key can access. [Learn more about using location services and API keys in the security and authentication guide.](#)

Basemaps

Geocoding (not stored)

Routing

Service area

GeoEnrichment

## Content and items

Add items

Add items to allow this API key to access maps and layers on your account. Learn more about using API keys to access maps, layers, and content in the [security and authentication guide.](#)



No items configured for access.

## specific clients

Configure client access with your API key by configuring authorized referrers.



## Monitor use of your API keys

Learn how to monitor usage of your API keys.

## Developer Guide

Learn about mapping APIs and location services

Build rich interactive mapping applications with ArcGIS APIs or with open source mapping APIs.

[APIs and SDKs](#)

[Location services](#)

[Security and authentication](#)

Learn how to build secure apps with

## Referrers

Add Referrer

Restrict the use of this API key to matching HTTP referer headers such as `http://*.your-app.com`. See [restricting API keys with](#)

# React & ArcGIS JS API app



Default
<input type="checkbox"/> _2010_Census_Profile_rep
<input type="checkbox"/> 1 Year Increments
<input type="checkbox"/> 5 Year Increments
<input type="checkbox"/> ACS_Housing_Summary_rep
<input type="checkbox"/> ACS_Population_Summary_rep
<input type="checkbox"/> Age
<input type="checkbox"/> Age By Race By Sex
<input type="checkbox"/> Age Dependency
<input type="checkbox"/> Age_50_Profile_rep
<input type="checkbox"/> Age_by_Sex_by_Race_Profile_rep
<input type="checkbox"/> Age_by_Sex_Profile_rep
<input type="checkbox"/> At Risk
<input type="checkbox"/> Automobiles & Automotive Products
<input type="checkbox"/> Automotive_Aftermarket_Expens
<input type="checkbox"/> Baby Products, Toys & Games

Standard geography name	Marion County
Total Population	351,108
Total Households	125,516
Average Household Size	2.71
Male Population	175,183
Female Population	175,925

Oregon Metro, State of Oregon GEO, Esri, HERE, Garmin, FAO, NOA... Powered by Esri

Demo

# Resources

- Guide: <https://developers.arcgis.com/arcgis-rest-js/>
- API Reference: <https://esri.github.io/arcgis-rest-js/api/>
- Developer dashboard:  
<https://developers.arcgis.com/dashboard/>
- Presentation source:  
<https://github.com/jwasilgeo/ds2021-working-with-location-services-with-arcgis-rest-js>
- Slides: <https://esriurl.com/ds21rest>



esri

**THE  
SCIENCE  
OF  
WHERE**



Please provide your feedback for this session by clicking on the session survey link directly below the video.