



# Create Interactive Maps with Leaflet (JavaScript library)

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Geolgnite  
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# Agenda

- Create GitHub account
- Host code on GitHub
- Create Leaflet choropleth web map
- Questions

## *What you'll need:*

- GitHub account
- Email access (to verify your new account)



## Workshop materials

Please visit the Dropbox link below to access the code, sample data file, and slides (link in chat):

<https://tinyurl.com/dfw3mdz4>





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## Using these resources

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- Feel free to **share and build on this material**, but please **credit me** if you do.
- Use and distribute this material for **non-commercial purposes**.
- If you build on this material, **share alike**: distribute with the same terms as this license.


***POLL:***

**What is your experience with  
programming/development?**

---

# Sign up for GitHub

github.com



Why GitHub? ▾TeamEnterpriseExplore ▾MarketplacePricing ▾

Search GitHub / Sign in Sign up

## 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 50 million developers.

Username

TestAcct01-mgo ✓

Email

TestAcct01.mgo@gmail.com ✓

Password

..... ✓

Make sure it's at least 15 characters OR at least 8 characters including a number and a lowercase letter. [Learn more.](#)

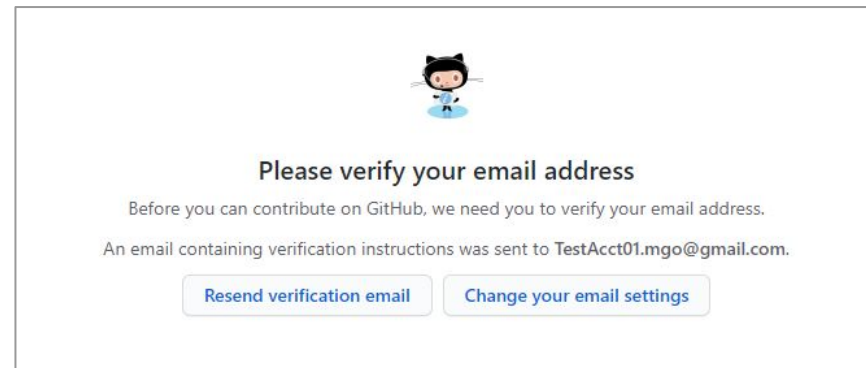
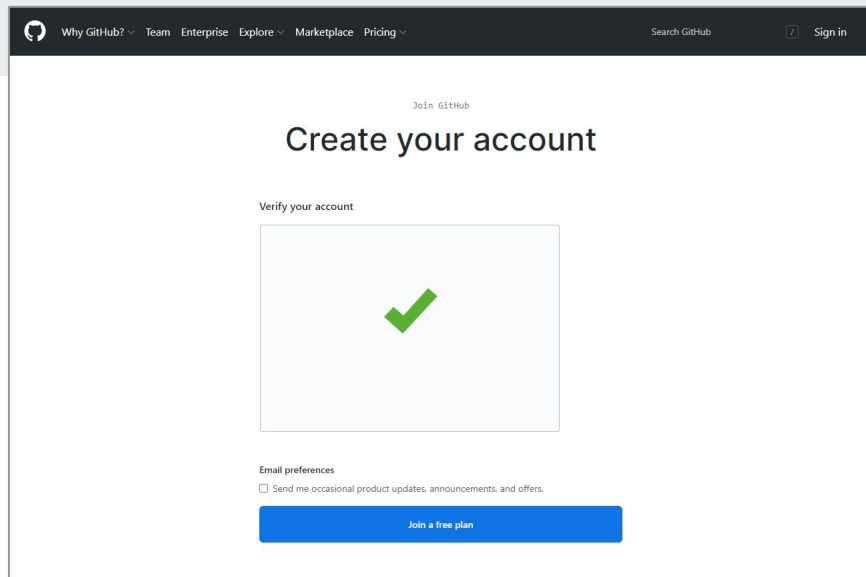
Sign up for GitHub

By clicking "Sign up for GitHub", you agree to our [Terms of Service](#) and [Privacy Statement](#). We'll occasionally send you account related emails.

# Verify your account


As you create your account, follow the prompts and click “Join a free plan”.

You’ll also be asked to verify your email address. Sign in to your email and find the verification message. Click the link to confirm your account.




# Create a repository

You're in! Now we'll create a repository to store our code and data files.



[Pull requests](#) [Issues](#) [Marketplace](#) [Explore](#)

[Overview](#) [Repositories](#) [Projects](#) [Packages](#)



TestAcct01-mgo

[Edit profile](#)

Joined 3 minutes ago

**ProTip!** Updating your profile with your name, location, and a profile picture helps other GitHub users get to know you.

[Edit profile](#)

Type: All

Language: All

[New](#)

TestAcct01-mgo doesn't have any public repositories yet.



# Create a repository

- Choose your repository name and add a description if you like.
- Make it public.
- You can add a README file to include more detailed information about your project.

## Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere?

[Import a repository.](#)

Owner \*



TestAcct01-mgo ▾

Repository name \*

LeafletWorkshop ✓

Great repository names are short and memorable. Need inspiration? How about [curly-palm-tree?](#)

Description (optional)



Public

Anyone on the internet can see this repository. You choose who can commit.



Private

You choose who can see and commit to this repository.

Initialize this repository with:

Skip this step if you're importing an existing repository.



Add a README file

This is where you can write a long description for your project. [Learn more.](#)



Add .gitignore

Choose which files not to track from a list of templates. [Learn more.](#)



Choose a license

A license tells others what they can and can't do with your code. [Learn more.](#)

This will set  main as the default branch. Change the default name in your [settings](#).

Create repository

# Create a repository

Your repository is now set up to host your code and data files.

 Search or jump to...  [Pull requests](#) [Issues](#) [Marketplace](#) [Explore](#)

 [TestAcct01-mgo](#) / [LeafletWorkshop](#)

 Unwatch  1

[Code](#) [Issues](#) [Pull requests](#) [Actions](#) [Projects](#) [Wiki](#) [Security](#) [Insights](#) [Settings](#)

 main   1 branch  0 tags

[Go to file](#)

[Add file](#) 

 Code 

[About](#)




No description, website, or topics provided.


 [Readme](#)


[Releases](#)

No releases published  
[Create a new release](#)

[Packages](#)

 [TestAcct01-mgo](#) Initial commit

67a99c6 1 minute ago  1 commits

 [README.md](#)

Initial commit

1 minute ago

README.md



## LeafletWorkshop

***NEXT:***

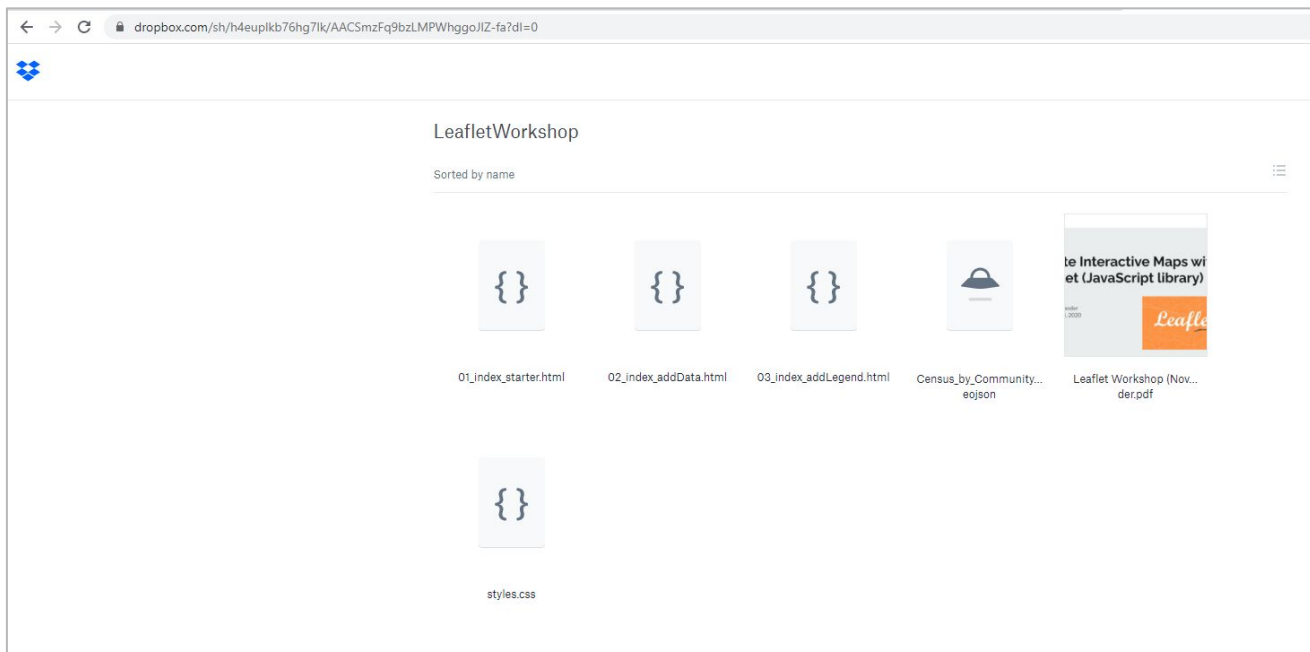
**Add the starter code to your repo.**

<https://tinyurl.com/dfw3mdz4>

---

# Download the starter code files

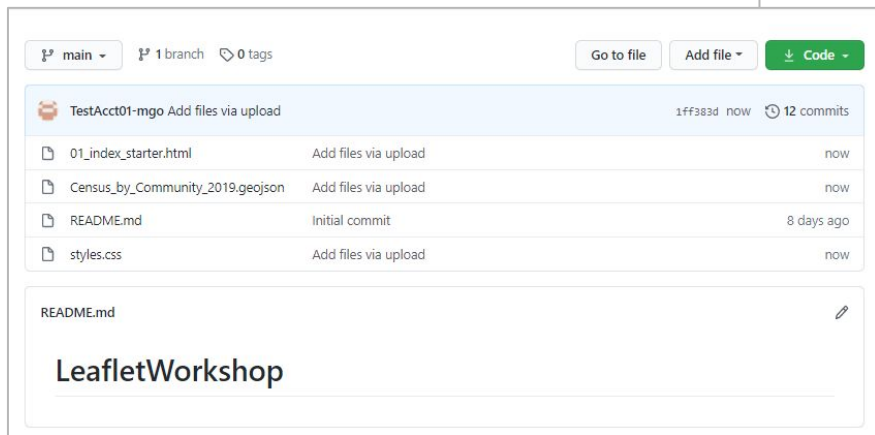
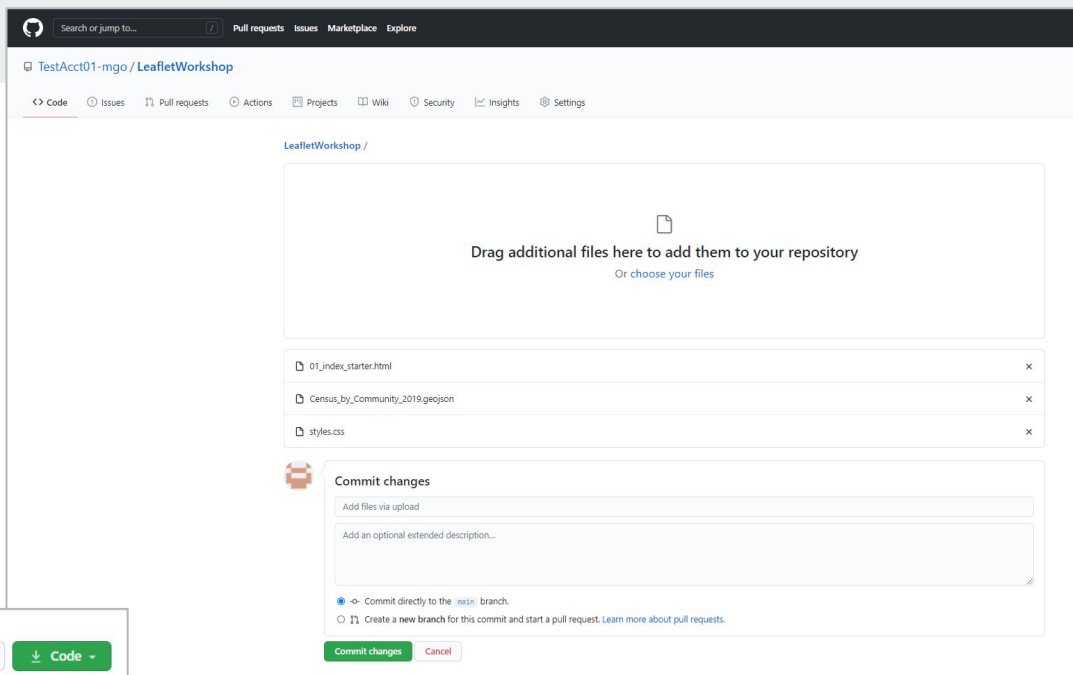
<https://tinyurl.com/dfw3mdz4>



# Add code to repo

Upload these code files to your repo:

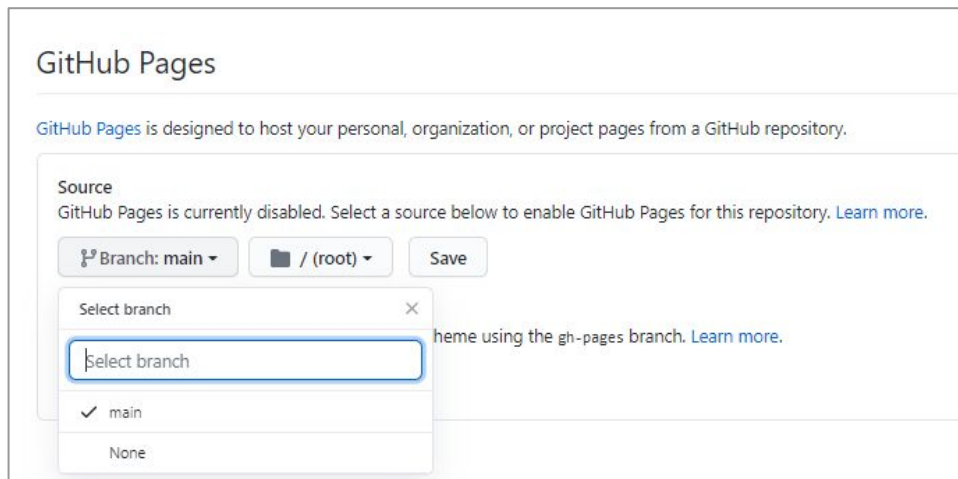
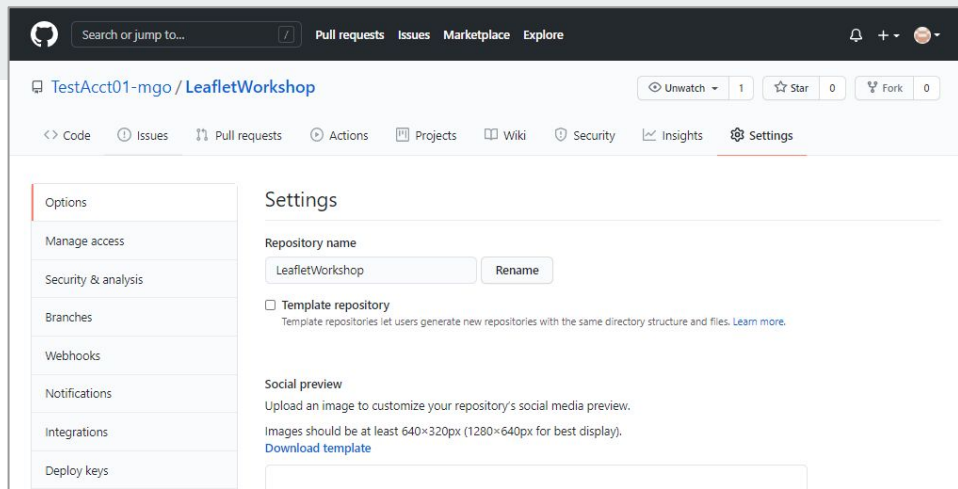
- 01\_index\_starter.html
- Census\_by\_Community\_2019.geojson
- styles.css



# Set up GitHub Pages

To actually view the result of our HTML file (not just the source code), we will create a GitHub Pages site to render the file.

- In your repo, click Settings.
- Click the “Pages” tab (second from bottom).
- Set the branch to “main” and the folder to “/root”. Save.



# Confirm URL

Once you've saved the GitHub Pages settings, go back into settings and back down to the GitHub Pages section to confirm your site's URL.

Your site's URL should have the following format:

**`https://<user>.github.io/<repository>/<Optional: page name>`**  
(e.g., `https://testacct01-mgo.github.io/LeafletWorkshop/01_index_starter.html`)


## GitHub Pages


GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.

✓ Your site is published at <https://testacct01-mgo.github.io/LeafletWorkshop/>

### Source

Your GitHub Pages site is currently being built from the `main` branch. [Learn more.](#)

 Branch: `main` ▾

 / (root) ▾

Save

### Theme Chooser

Select a theme to publish your site with a Jekyll theme. [Learn more.](#)

Choose a theme

### Custom domain

Custom domains allow you to serve your site from a domain other than `testacct01-mgo.github.io`. [Learn more.](#)

Save

☒ **Enforce HTTPS**

— Required for your site because you are using the default domain (`testacct01-mgo.github.io`)

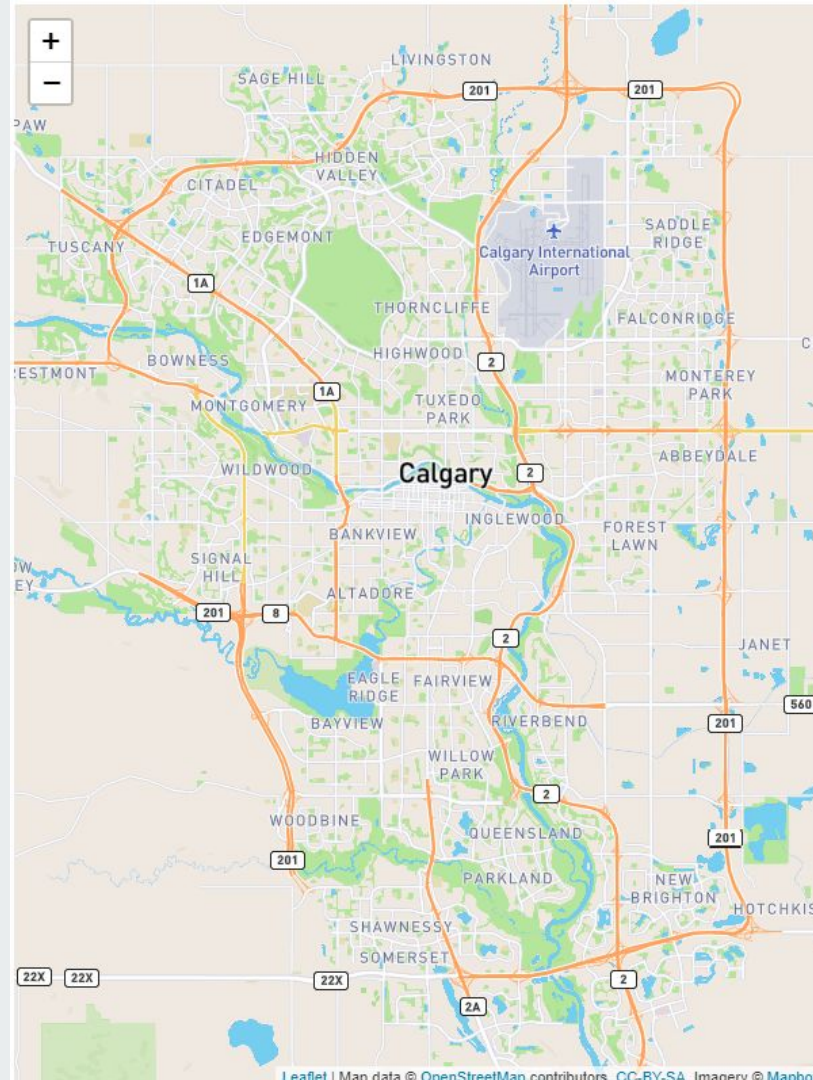
HTTPS provides a layer of encryption that prevents others from snooping on or tampering with traffic to your site. When HTTPS is enforced, your site will only be served over HTTPS. [Learn more.](#)



# View your hosted map

Example:

[https://testacct01-mgo.github.io/LeafletWorkshop/01\\_index\\_starter.html](https://testacct01-mgo.github.io/LeafletWorkshop/01_index_starter.html)







# HTML, CSS, & JavaScript

Leaflet is a JavaScript library and requires HTML and CSS to render a web map.

**HTML:** Provides the structure of a web page.


- *In this project:* Controls the map container & references JavaScript/CSS to render the map.

**CSS:** Controls the style of a web page (fonts, colours, layout, responsive design).

- *In this project:* Controls the styling of the legend (font, background colours, spacing, etc.).

**JavaScript:** Facilitates interactive/complex website elements and additional functionality.

- *In this project:* The Leaflet JS library provides specialized mapping functionality. Styling (e.g., colours, transparency) is also supported.



# Exploring the starter code

01\_index\_starter.html

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4
5     <title>Leaflet Starter Code - GoGeomatics Workshop (Nov 24, 2020)</title>
6
7     <meta charset="utf-8" />
8     <meta name="viewport" content="width=device-width, initial-scale=1.0">
9
10
11     <link rel="stylesheet" href="https://unpkg.com/leaflet@1.7.1/dist/leaflet.css"
12         integrity="sha512-
13         xodZBNTC5n17Xt2atTPuE1HxjVMSvLVW9ocqUKLsCC5CXdbqCmb1Ash0MAS6/keqq/sMZM219scR4PsZC
14         hSR7A==" crossorigin=""/>
15
16     <!-- Make sure you put this AFTER Leaflet's CSS -->
17     <script src="https://unpkg.com/leaflet@1.7.1/dist/leaflet.js" integrity="sha512-
18         XQoYMqMTK8LvdxXYG3nZ448hOEQiglfqkJs1NOQV44cWnUrBc8PkAOcXy20w0vLaXaUvuarI0BhIXZ5V3
19         ynxwA==" crossorigin=""></script>
20
21 </head>
22
23 <body>
24
25     <div id="mapid" style="width: 600px; height: 800px;"></div>
26
27     // Initialize map and set its view to Calgary, Alberta
28
29     var mymap = L.map('mapid').setView([51.0300, -114.0750], 11);
30
31
32
33     // Add the Mapbox Streets tile layer to the map
34
35     L.tileLayer('https://api.mapbox.com/styles/v1/{id}/tiles/{z}/{x}/{y}?
36         access_token=pk.eyJ1IjoibWFWYm94IiwiaW50IjImNpejY4NXVycTA2emYycXBndHRqcmZ3N3gifQ.rJ
37         cFIG214AriISLbB6B5aw', {
38         maxZoom: 18,
39         attribution: 'Map data &copy; <a
40             href="https://www.openstreetmap.org/">OpenStreetMap</a> contributors, ' +
41             '<a href="https://creativecommons.org/licenses/by-sa/2.0/">CC-BY-SA</a>,
42             ' +
43             'Imagery &copy; <a href="https://www.mapbox.com/">Mapbox</a>',
44         id: 'mapbox/streets-v11',
45         tileSize: 512,
46         zoomOffset: -1
47     }).addTo(mymap);
```

# Open file in your browser



Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4
5     <title>Leaflet Starter Code - GoGeomatics Workshop (Nov 24, 2020)</title>
6
7     <meta charset="utf-8" />
8     <meta name="viewport" content="width=device-width, initial-scale=1.0">
9
10
11     <link rel="stylesheet" href="https://unpkg.com/leaflet@1.7.1/dist/leaflet.css" integrity="sha512-
12     xodZBNTC5n17Xt2atTPuE1HxjVMSvLVW9ocqUKLsCC5CC5CbqCmbAshOMAS6/keq/sMzMZ19scR4PsZChSR7A=="
13     crossorigin="" />
14
15     <!-- Make sure you put this AFTER Leaflet's CSS -->
16     <script src="https://unpkg.com/leaflet@1.7.1/dist/leaflet.js" integrity="sha512-
17     XQoYmMTK8LvdXXYG3nZ448h0EQiglfqkJs1NOQV44cWnUrBc8PKA0cXy20w0vLaXaVUearIOBhIXZ5V3ynxwA=="
18     crossorigin=""></script>
19
20 </head>
21 <body>
22
23     <div id="mapid" style="width: 600px; height: 800px;"></div>
24 <script>
25
26     // Initialize map and set its view to Calgary, Alberta
27
28     var mymap = L.map('mapid').setView([51.0300, -114.0750], 11);
29
30
31     // Add the Mapbox Streets tile layer to the map
32
33     L.tileLayer('https://api.mapbox.com/styles/v1/{id}/tiles/{z}/{x}/{y}?
34     access_token=pk.eyJ1IjoibWFWYm94IiwiaW50IjImNpejY4NXVycTA2emYycXBndHRqcmZ3N3gifQ.rJcFIg214AriISLbB6
35     B5aw', {
36         maxZoom: 18,
37         attribution: 'Map data &copy; <a href="https://www.openstreetmap.org/">OpenStreetMap</a>
38         contributors, ' +
39         ' <a href="https://creativecommons.org/licenses/by-sa/2.0/">CC-BY-SA</a>, ' +
40         ' Imagery &copy; <a href="https://www.mapbox.com/">Mapbox</a>',
41         id: 'mapbox/streets-v11',
42         tileSize: 512,
43         zoomOffset: -1
44     }).addTo(mymap);
45
46
```

## <head>

This section contains metadata.

It sets document properties like the **character set** and references the **Leaflet CSS and JavaScript files** that are hosted online.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4
5      <title>Leaflet Starter Code - GoGeomatics Workshop (Nov 24, 2020)</title>
6
7      <meta charset="utf-8" />
8      <meta name="viewport" content="width=device-width, initial-scale=1.0">
9
10
11     <link rel="stylesheet" href="https://unpkg.com/leaflet@1.7.1/dist/leaflet.css" integrity="sha512-
12     xodZBNTC5n17Xt2atTPuE1HxjVMSvLVW9ocqUKLsCC5CXdbqCmblAsh0MAS6/keqq/sMZM19scR4PsZChSR7A=="
13     crossorigin="" />
14
15     <!-- Make sure you put this AFTER Leaflet's CSS -->
16     <script src="https://unpkg.com/leaflet@1.7.1/dist/leaflet.js" integrity="sha512-
17     XQoYMqMTK8LvdxXYG3nZ448h0EQiglfbqJs1NOQV44cWnUrBc8Pka0cXy20w0vLaXaVUearIOBhiXZ5V3ynxwA=="
18     crossorigin=""></script>
19
20 </head>
```

- `<link rel="stylesheet" href="https://unpkg.com/leaflet@1.7.1/dist/leaflet.css"...`  
Leaflet CSS file (controls Leaflet's styling/formatting specifications)
- `<script src="https://unpkg.com/leaflet@1.7.1/dist/leaflet.js"...`  
Leaflet JavaScript file (controls Leaflet functionality)

## <body>

This section controls the web map itself - the size, layers, and functionality.

Try repositioning the map to a new location!

```
21 <body>
22
23
24 <div id="mapid" style="width: 600px; height: 800px;"></div>
25 <script>
26
27   // Initialize map and set its view to Calgary, Alberta
28
29   var mymap = L.map('mapid').setView([51.0300, -114.0750], 11);
30
31
32
33   // Add the Mapbox Streets tile layer to the map
34
35   L.tileLayer('https://api.mapbox.com/styles/v1/{id}/tiles/{z}/{x}/{y}?
access_token=pk.eyJ1IjoibWFwYm94IiwiaWUiYSI6ImNpejY4NXVycTA2emYycXBndHRqcmZ3N3gifQ.rJcFIG214AriISLbB6
B5aw', {
36     maxZoom: 18,
37     attribution: 'Map data &copy; <a href="https://www.openstreetmap.org/">OpenStreetMap</a>
contributors, ' +
38       '<a href="https://creativecommons.org/licenses/by-sa/2.0/">CC-BY-SA</a>, ' +
39       'Imagery © <a href="https://www.mapbox.com/">Mapbox</a>',
40     id: 'mapbox/streets-v11',
41     tileSize: 512,
42     zoomOffset: -1
43   }).addTo(mymap);
44
```

- **var mymap = L.map('mapid').setView([51.0300, -114.0750], 11);**  
Sets the map coordinates and zoom level.
- **L.tileLayer...**  
Add a tile layer of your choice and configure the parameters; in this case, the Mapbox Streets layer was used.

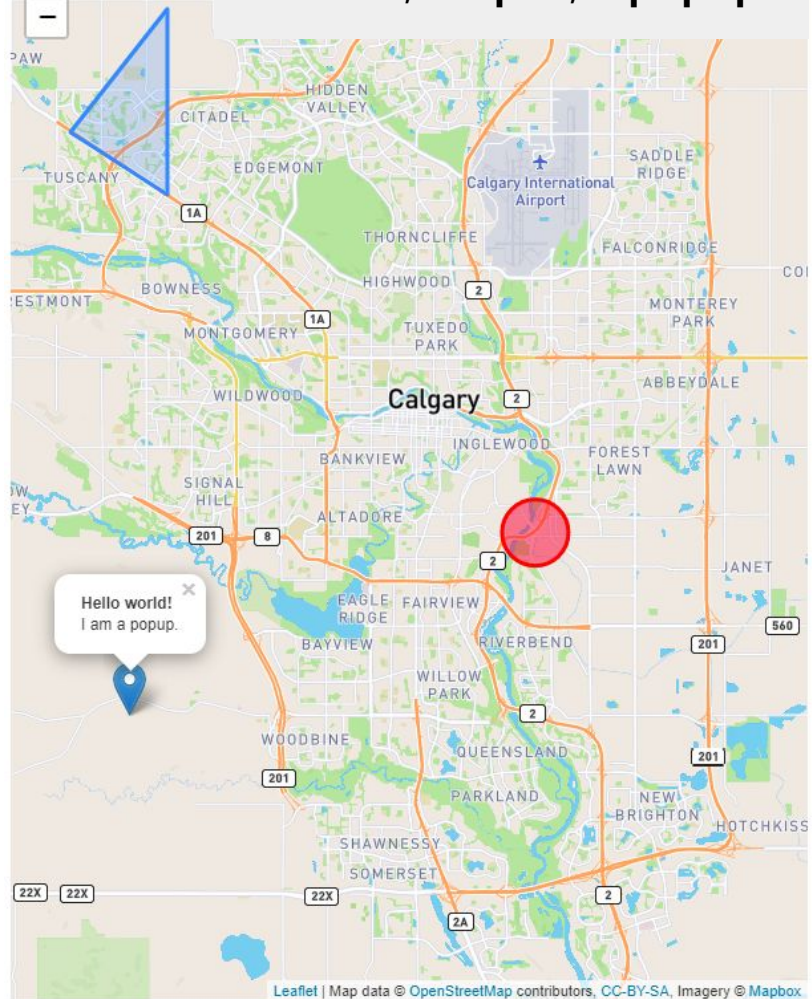
# Syntax notes for reference



HTML		CSS		JavaScript (JS)	
<code>&lt;script&gt; &lt;/script&gt;</code>	Denotes beginning/end of JS code	<code>.info</code>	“.” denotes class selector - way of identifying an HTML element	<code>function polyStyle()</code>	Denotes a function (package of code that is called from another part of the code).
<code>&lt;!-- Comment --&gt;</code>	Comment (not executable code)	<code>/* Comment */</code>	Comment (not executable code)	<code>// Comment</code>	Comment (not executable code)



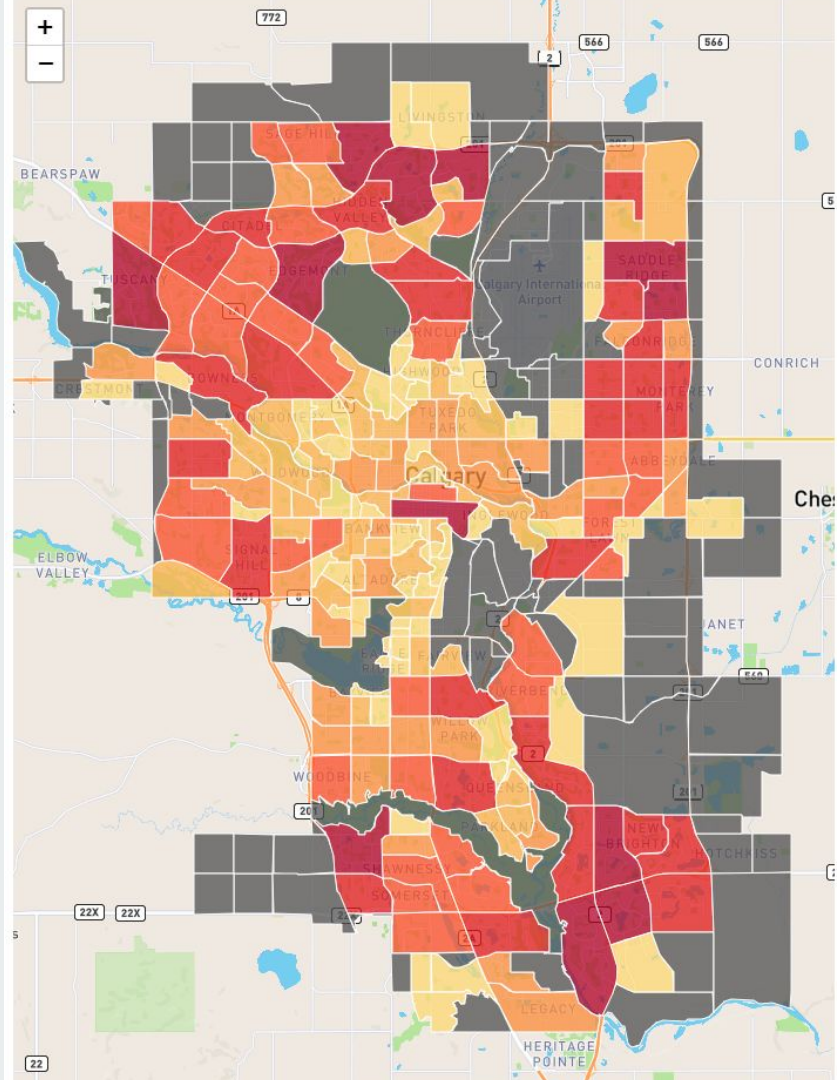
# Markers, shapes, & popups



```
36 maxZoom: 18,
37 attribution: 'Map data &copy; <a href="https://www.openstreetmap.org/">OpenStreetMap</a>
   contributors, ' +
38   ' <a href="https://creativecommons.org/licenses/by-sa/2.0/">CC-BY-SA</a>, ' +
39   'Imagery &copy; <a href="https://www.mapbox.com/">Mapbox</a>',
40   id: 'mapbox/streets-v11',
41   tileSize: 512,
42   zoomOffset: -1
43 }).addTo(mymap);
44
45
46
47 // ----- BEGIN SECTION (Markers, circles, polygons, & popups) -----
48 // Enable the code below to show additional elements that can be added to your map.
49
50
51
52 L.marker([50.95, -114.22]).addTo(mymap)
53   .bindPopup("<b>Hello world!</b><br />I am a popup.").openPopup();
54
55
56
57 L.circle([51.0100, -114.0100], 1200, {
58   color: 'red',
59   fillColor: '#f03',
60   fillOpacity: 0.5
61 }).addTo(mymap).bindPopup("I am a circle.");
62
63 L.polygon([
64   [51.1800, -114.20],
65   [51.1200, -114.20],
66   [51.1400, -114.25]
67 ]).addTo(mymap).bindPopup("I am a polygon.");
68
69
70 var popup = L.popup();
71
72 function onMapClick(e) {
73   popup
74     .setLatLng(e.latlng)
75     .setContent("You clicked the map at " + e.latlng.toString())
76     .openOn(mymap);
77 }
78
79 mymap.on('click', onMapClick);
80
81
82
83 // ----- END SECTION (Markers, circles, polygons, & popups) -----
84
85 </script>
86 </body>
87 </html>
88
```

# Adding the data

- 02\_index\_addData.html
- Census\_by\_Community\_2019.geojson





# Find data

We need to include a GeoJSON file in our Leaflet map.

I downloaded a community census layer from the City of Calgary's website. This is the original link to the data layer:

<https://data.calgary.ca/Demographics/Census-by-Community-2019/rkfr-buzb>

The GeoJSON file needs to be stored in the same directory as your HTML Leaflet mapping file.

The screenshot shows the City of Calgary Data Catalog interface. At the top, there's a search bar and navigation links: Home, Browse Data, Dataset Suggestions, About, Developer Info, and Help. The main heading is 'Census by Community 2019' with a 'Demographics' tag. Below this, a description states: 'Census data is an official count of dwelling units and population within those units. The data is physically collected and may be supplemented with other information such as the periodic age/gender distribution data. This additional data allows for better interpretation of the population statistics. A community district is a fixed boundary within Calgary, created More'. To the right of the description are buttons for 'View Data', 'Visualize', 'Export', 'API', and a menu icon. A dropdown menu is open, showing 'Download Census by Community 2019' with a close button. Below this, it says 'Download Census by Community 2019 for offline use in other applications.' and provides buttons for 'CSV', 'KML', and 'Shapefile'. Under 'Additional Formats', there are links for 'CSV for Excel', 'KML', 'TSV for Excel', 'CSV for Excel (Europe)', 'RDF', 'XML', 'GEOJSON', and 'RSS'. Below the description, the 'About this Dataset' section provides metadata: 'Updated April 9, 2020', 'Data Last Updated September 3, 2019', 'Metadata Last Updated April 9, 2020', 'Date Created August 29, 2019', 'Views 7,706', and 'Downloads 2,213'. It also lists 'Data Provided by The City of Calgary' and 'Dataset Owner Calgary Open Data', with a 'Contact Dataset Owner' button. The 'Data Supplier' section shows 'Organization The City of Calgary' and 'Business Unit City Clerk's Office'. The 'License/Attribution' section shows 'License URL https://data.calgary.ca/d/Open-Data-Terms/u45n-7awa'. The 'Time/Date' section shows 'Update Frequency None'. The 'Geospatial Information' section shows 'Dataset contains geospatial information Yes' and 'Map Projection EPSG:4326 WGS84'. At the bottom right, there is a Creative Commons license icon: (CC) BY-NC-SA.

Calgary

Home Browse Data Dataset Suggestions About Developer Info Help

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Sign In

Census by Community 2019 Demographics

View Data Visualize Export API ...

Download Census by Community 2019

Download Census by Community 2019 for offline use in other applications.

CSV KML Shapefile

Additional Formats

[CSV for Excel](#) [KML](#) [TSV for Excel](#)  
[CSV for Excel \(Europe\)](#) [RDF](#) [XML](#)  
[GEOJSON](#) [RSS](#)

About this Dataset

Updated  
**April 9, 2020**

Data Last Updated September 3, 2019 Metadata Last Updated April 9, 2020

Date Created August 29, 2019

Views **7,706** Downloads **2,213**

Data Provided by The City of Calgary Dataset Owner Calgary Open Data

Contact Dataset Owner

Data Supplier

Organization The City of Calgary  
Business Unit City Clerk's Office

License/Attribution

License URL <https://data.calgary.ca/d/Open-Data-Terms/u45n-7awa>

Time/Date

Update Frequency None

Geospatial Information

Dataset contains geospatial information Yes  
Map Projection EPSG:4326 WGS84

(CC) BY-NC-SA

# Add jQuery library

We'll add a reference to the jQuery library so that we can easily pull in our data layer.

NOTE: jQuery is a bit outdated, but it's a simple approach to accessing data. Feel free to use other methods to connect to your data if you wish.

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4
5      <title>Leaflet Starter Code - GoGeomatics Workshop (Nov 24, 2020)</title>
6
7      <meta charset="utf-8" />
8      <meta name="viewport" content="width=device-width, initial-scale=1.0">
9
10
11     <link rel="stylesheet" href="https://unpkg.com/leaflet@1.7.1/dist/leaflet.css" integrity="sha512-
12     xodZBNTC5n17Xt2atTPuE1HxjVMSvLVW9ocqUKLSCC5CXdbqCmblAshOMAS6/keqq/sMZM19scR4PsZChSR7A=="
13     crossorigin="" />
14
15     <!-- Make sure you put this AFTER Leaflet's CSS -->
16     <script src="https://unpkg.com/leaflet@1.7.1/dist/leaflet.js" integrity="sha512-
17     XQoYMqMTK8LvdXXYG3nZ448h0EQiglfqkJs1NOQV44cWnUrBc8PkA0cXy20w0vLaXaVUearIOBhiXZ5V3ynxwA=="
18     crossorigin=""></script>
19
20     <!-- Add jQuery -->
21     <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
22
23 </head>
24
```

**<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>**

*This jQuery script reference points to a version of jQuery that is hosted by Google.*

# Get the data layer

We'll use the `$.getJSON` method to pull in the data layer. The `$` is equivalent to "jQuery" (so the method is `jQuery.getJSON()`).

`L.geoJson` is a Leaflet class that parses data and displays it on the map.

```
36 // Add the Mapbox Streets tile layer to the map
37
38
39 ▼ L.tileLayer('https://api.mapbox.com/styles/v1/{id}/tiles/{z}/{x}/{y}?
    access_token=pk.eyJ1IjoibWFwYm94IiwiaSI6ImNpejY4NXVycTA2emYycXBndHRqcmZ3N3giQ.rJcFI6214AriISLbB6B5aw
    ', {
40     maxZoom: 18,
41     attribution: 'Map data &copy; <a href="https://www.openstreetmap.org/">OpenStreetMap</a>
        contributors, ' +
42     '<a href="https://creativecommons.org/licenses/by-sa/2.0/">CC-BY-SA</a>', ' +
43     'Imagery © <a href="https://www.mapbox.com/">Mapbox</a>',
44     id: 'mapbox/streets-v11',
45     tileSize: 512,
46     zoomOffset: -1
47 }).addTo(mymap);
48
49
50
51 // loading GeoJSON file - https://www.igismap.com/add-load-geojson-file-point-polyline-polygon-map-
    leaflet-js/
52 ▼ $.getJSON("Census_by_Community_2019.geojson",function(data){
53     // L.geoJson function is used to parse geojson file and load on to map
54 ▼ L.geoJson(data, {
55     style: polyStyle
56 }).addTo(mymap);
57 });
58
59
60
```

```
$.getJSON("Census_by_Community_2019.geojson",function(data){
    L.geoJson(data, {
        style: polyStyle
    }).addTo(mymap);
});
```

← *polyStyle will control the colours of the polygons - we'll define this in the next step.*

# Style the data

We'll add two functions:

## colourBreaks:

- Defines the data breaks and assigns a colour to each range.
- Substitute different HTML colour codes to define colours of your choice!

## polyStyle:

- Sets the colour breaks (previous function) as the fill colour for the polygons and links these styles to the RES\_CNT data field.
- Sets the weight, line colours, line opacity, and fill opacity.

```
51 // loading GeoJSON file - https://www.igismap.com/add-load-geojson-
file-point-polyline-polygon-map-leaflet-js/
52 ▼ $.getJSON("Census_by_Community_2019.geojson",function(data){
53     // L.geoJson function is used to parse geojson file and load on to
map
54     L.geoJson(data, {
55         style: polyStyle
56     }).addTo(mymap);
57 });
58
59
60
61 // Define colours based on data ranges (create choropleth map)
62 ▼ function colourBreaks(d) {
63     return d > 15000 ? '#b10026' :
64         d > 10000 ? '#e31a1c' :
65         d > 7000 ? '#fc4e2a' :
66         d > 5000 ? '#fd8d3c' :
67         d > 2500 ? '#feb24c' :
68         d > 1 ? '#fed976' :
69         '#525252';
70 }
71
72
73 // Style polygons and control opacity
74 ▼ function polyStyle(feature) {
75     return {
76         weight: 1,
77         fillColor: colourBreaks(feature.properties.res_cnt),
78         color: 'FFFFFF',
79         opacity: 1,
80         fillOpacity: 0.75
81     };
82 }
83
```

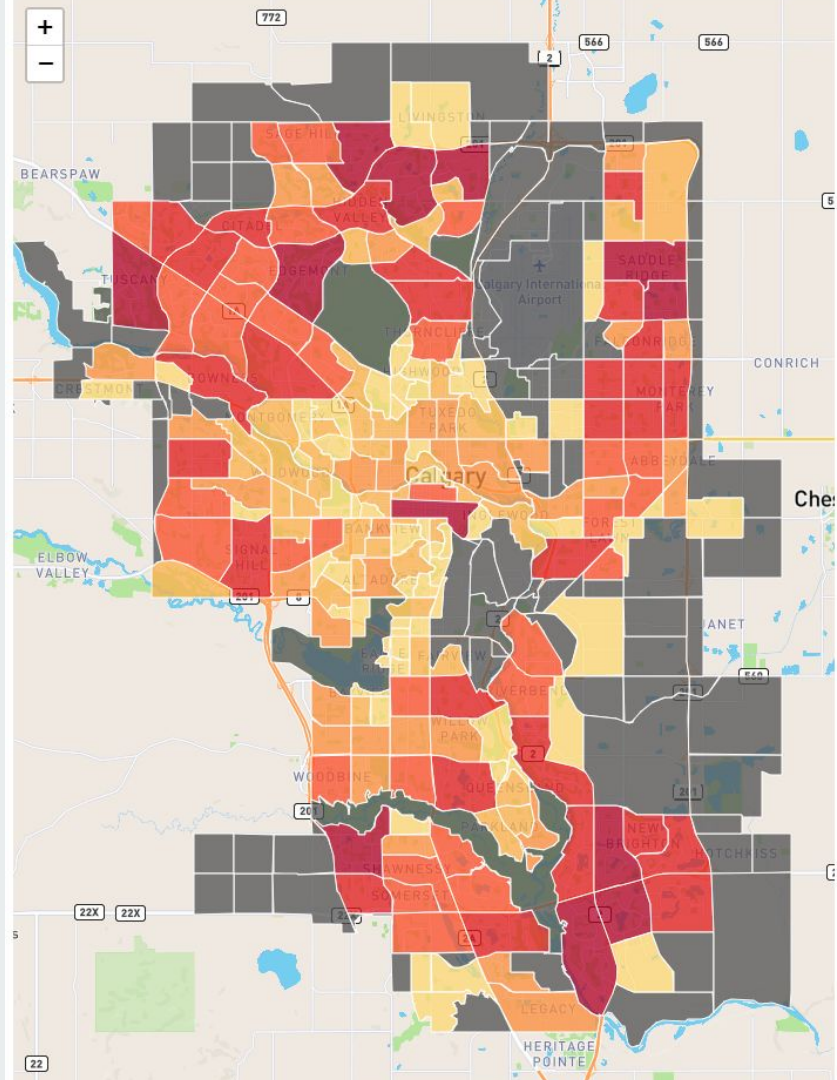
Keep *res\_cnt* lowercase

RES_CNT	Number of residents
---------	---------------------

# Test it out!

*Open your index HTML file in your browser  
and make sure your data layer appears.*

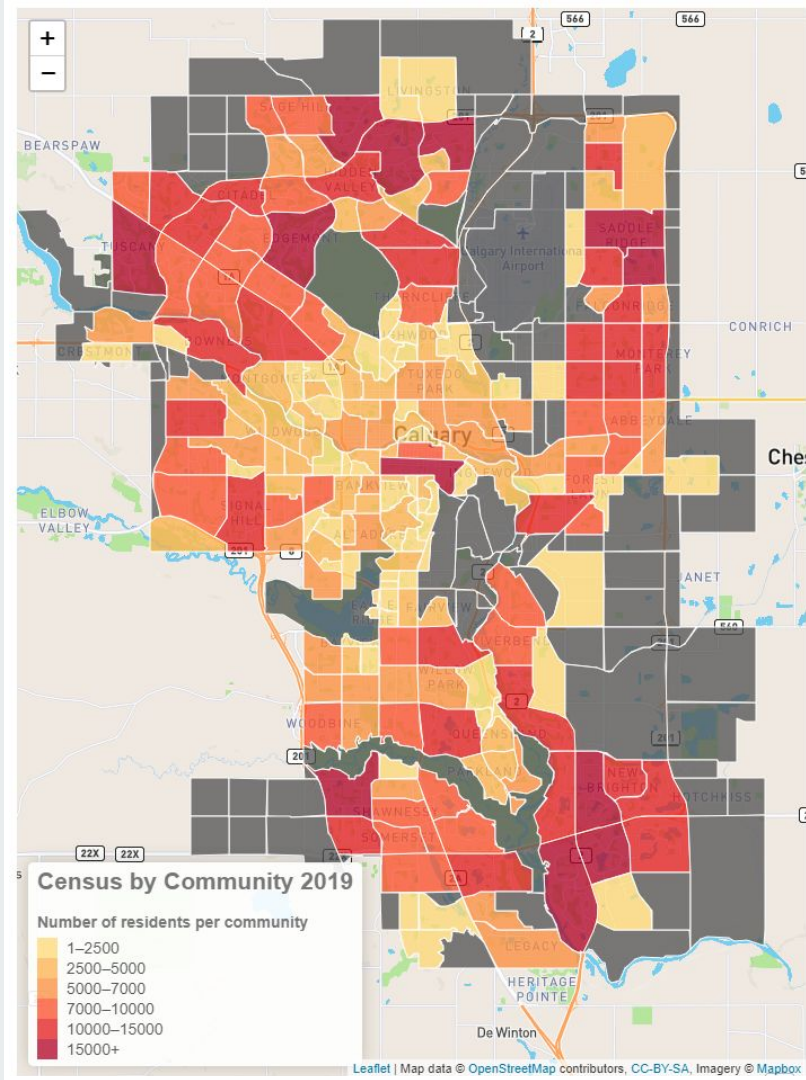
*Check-in: How are you doing?*





# Adding a legend

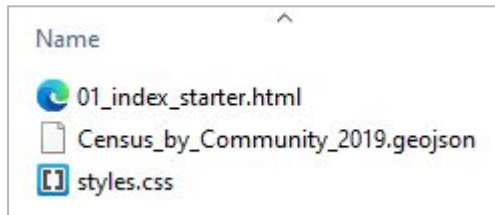
- 03\_index\_addLegend.html
- styles.css



# Add styles.css

We'll add a reference to an external CSS style sheet (styles.css) to control the look of our legend.

Ensure the styles.css file is saved in the same folder as your index.html file and data file.



```
1  <!DOCTYPE html>
2  <html>
3  <head>
4
5      <title>Leaflet Starter Code - GoGeomatics Workshop (Nov 24, 2020)</title>
6
7      <meta charset="utf-8" />
8      <meta name="viewport" content="width=device-width, initial-scale=1.0">
9
10
11      <link rel="stylesheet" href="https://unpkg.com/leaflet@1.7.1/dist/leaflet.css" integrity="sha512-xodZBNTC5n17Xt2atTPuE1HxjVMSvLVW9ocqUKLsCC5CXdbqCmblAshOMAS6/keqq/sMzMZ19scr4PsZChSR7A==" crossorigin="" />
12
13      <link rel="stylesheet" href="styles.css"/>
14
15
16      <!-- Make sure you put this AFTER Leaflet's CSS -->
17      <script src="https://unpkg.com/leaflet@1.7.1/dist/leaflet.js" integrity="sha512-XQoYMqMTK8LvdxXYG3nZ448h0EQiglfqkJs1NOQV44cWnUrBc8PkA0cXy20w0vLaXaVUearIOBhiXZ5V3ynxwA==" crossorigin="">
18
19
20
21      <!-- Add jQuery -->
22      <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
23
24
25
26  </head>
27
```

`<link rel="stylesheet" href="styles.css"/>`

# Add legend

This section adds the legend to the bottom left corner of the map.

It leverages the `colourBreaks()` function to generate the coloured squares for each range.

The `styles.css` file controls the font, background colours, and positioning.

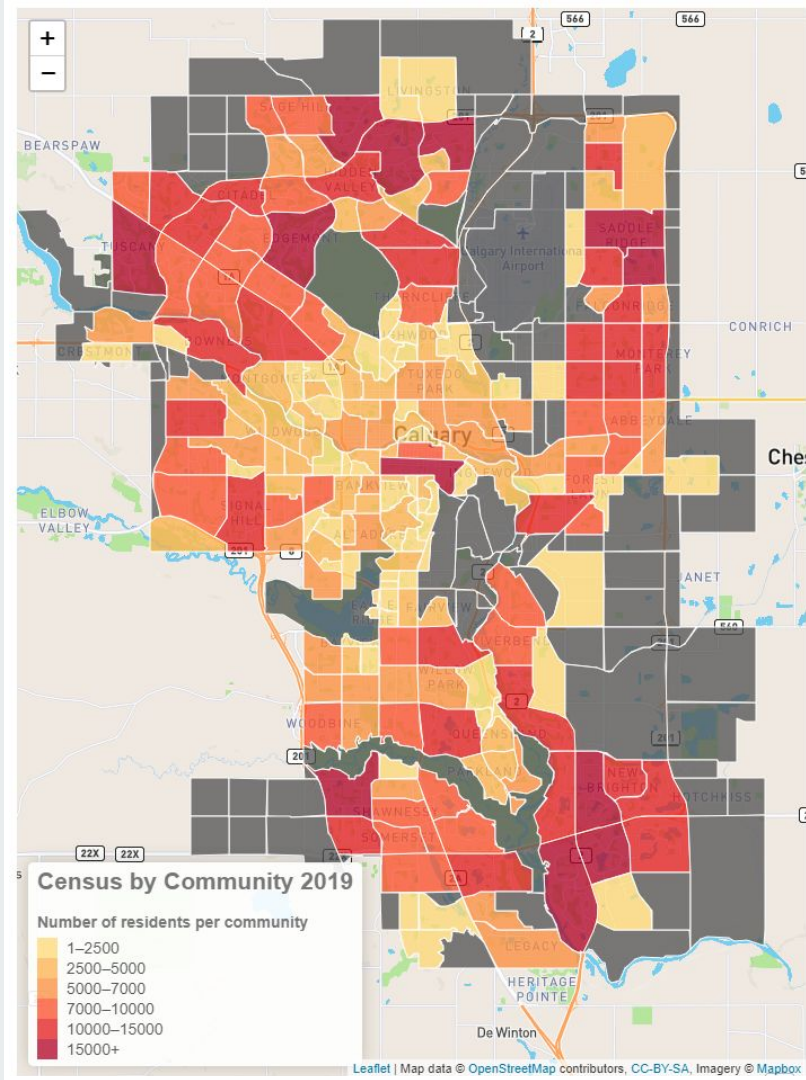
```
79 ▼ function polyStyle(feature) {  
80 ▼   return {  
81     weight: 1,  
82     fillColor: colourBreaks(feature.properties.res_cnt),  
83     color: 'FFFFFF',  
84     opacity: 1,  
85     fillOpacity: 0.75  
86   };  
87 }  
88  
89  
90  
91 // Add legend - modified from https://leafletjs.com/examples/choropleth/  
92  
93 var legend = L.control({position: 'bottomleft'});  
94  
95 ▼ legend.onAdd = function (mymap) {  
96  
97   var div = L.DomUtil.create('div', 'info legend'),  
98     grades = [1, 2500, 5000, 7000, 10000, 15000],  
99     labels = [];  
100  
101   div.innerHTML = '<h2>Census by Community 2019</h2>' + '<br>' + '<h4>Number of residents per community</h4>';  
102  
103   // loop through our density intervals and generate a label with a colored square for each interval  
104 ▼   for (var i = 0; i < grades.length; i++) {  
105     div.innerHTML +=  
106       '<i style="background:' + colourBreaks(grades[i] + 1) + '></i>' +  
107       grades[i] + (grades[i + 1] ? '&ndash;' + grades[i + 1] + '<br>' : '+');  
108   }  
109  
110   return div;  
111 };  
112  
113 legend.addTo(mymap);  
114
```

Copy the JavaScript code from `03_index_addLegend.html` and add it below the `polyStyle()` function.



# Test it out!

*Open your index HTML file in your browser  
and check if your legend appears.*





Questions?