

**2021 Community Summit Toward Equity,  
by SFU Public Square**

**Workshop Mapping Equity: Using GIS and Maps to Make Invisible  
Realities Visible**

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September 29, 2021

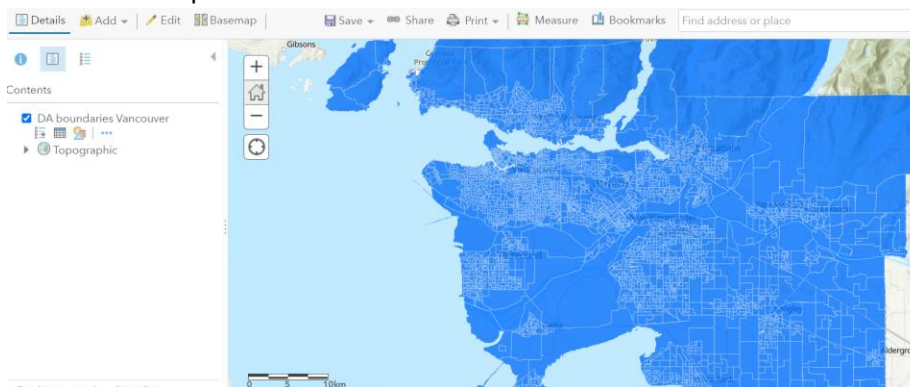
### Section 1: Steps

1. **Download the datasets**
2. **Login to ArcGIS Online**

Navigate to [www.arcgis.com](http://www.arcgis.com) (sign up for a public free account if you haven't done so already) and sign in

3. **Add a data layer on ArcGIS Online**

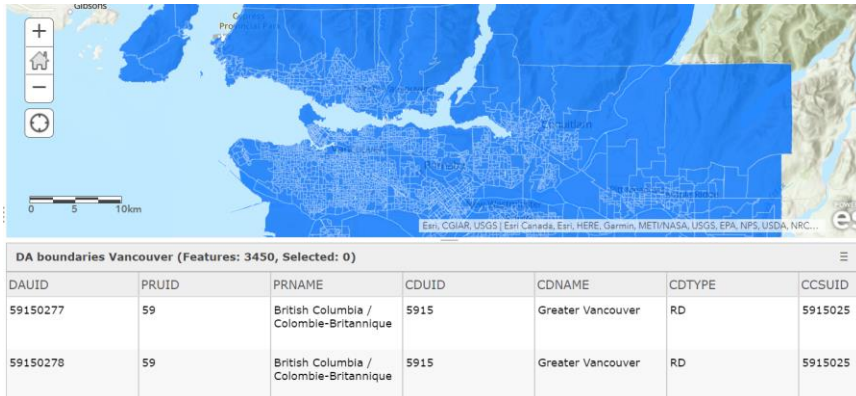
- Click on **“Map”**, which
- Click on the Menu **Add- Add Layer from File-** navigate to the shape file you just downloaded **DA\_boundaries\_Vancouver** and then **“Import Layer”**.
- You will be prompted to choose an attribute to show. Pick **“show location only”** from the drop-down menu. You will see the data is loaded:



- From your left, under the layer DA boundaries Vancouver, click on the **“Show Table”** icon:



You will then see a table showing up under the map. This spreadsheet is called “**attribute table**”, which is an important GIS concept. Try clicking on one of the rows and see what happens.



#### 4. Add another data layer with visible minority people numbers

Till now, you can't yet visualize the number of visible minority people on the map, because there is no attribute for visible minority people in this table. So, the next step is to add that data (the csv file you have downloaded) to this shape file.

This is something called **Join** in GIS, but unfortunately this free version of ArcGIS Online account doesn't allow you to do that. So as a workaround, I've done the Join and put the shape file on Esri's server for you to use.

- Click on the Menu **Add- Add Layer from Web**
- Copy and paste this url:

[https://services.arcgis.com/E5vyYQKPMX5X3R3H/arcgis/rest/services/DA\\_boundaries\\_VMinority\\_Vancouver/FeatureServer](https://services.arcgis.com/E5vyYQKPMX5X3R3H/arcgis/rest/services/DA_boundaries_VMinority_Vancouver/FeatureServer)

You will see this layer has been added to your Map Viewer.

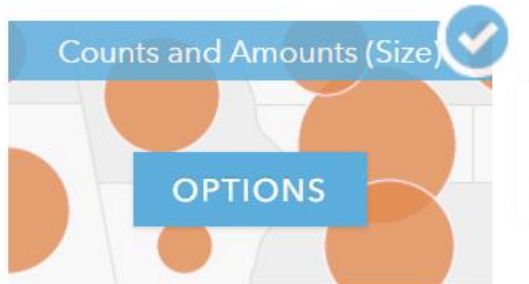
- Switch off the layer **DA boundaries Vancouver**.
- Click on the new Layer **DA boundaries VMinority Vancouver**, then click on the Show Table icon beneath it. Scroll the table to read all the columns. Have you noticed the new attributes?

#### 5. Making a proposal symbol map

- Click on the “**Change Style**” icon below the Layer **DA boundaries VMinority Vancouver**.
- **Choose an attribute to show:** pick **Visible\_minority**, which is the total number of minority people for each DA.
- Select a **drawing style:**  
**Counts and Amounts (Size)** shows as the first one, pick it.
- Click on the **Options:**

## 2 Select a drawing style

Set default style



- Check the box **“Classify Data”**, and leave the default with **4 classes** as is.

Visible\_minority

Size

Min  px Max  px

Classify Data

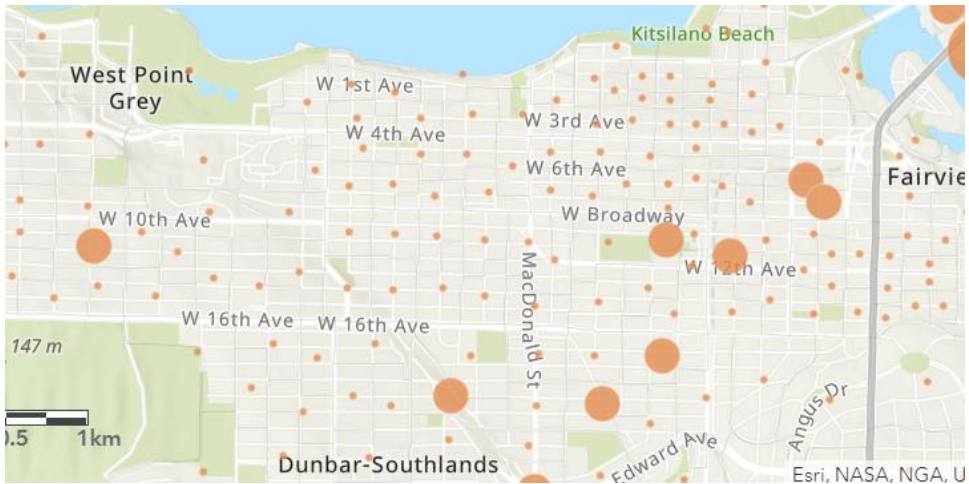
Using

With  classes

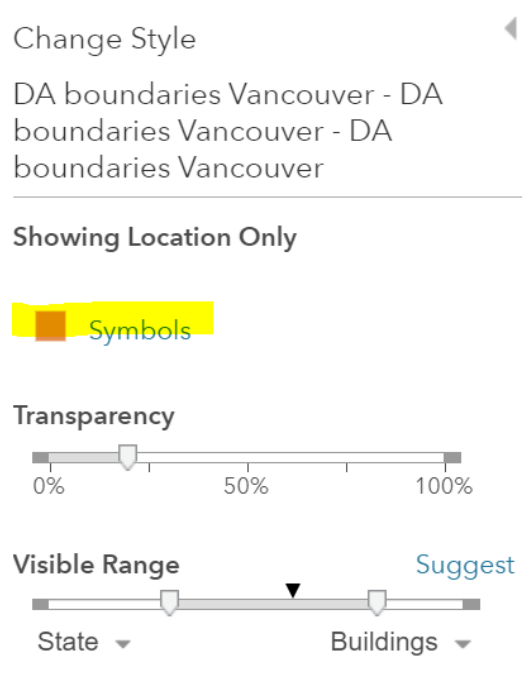
Round classes:

- Draw features with out of range or no value.
- Rotate symbols (degrees)

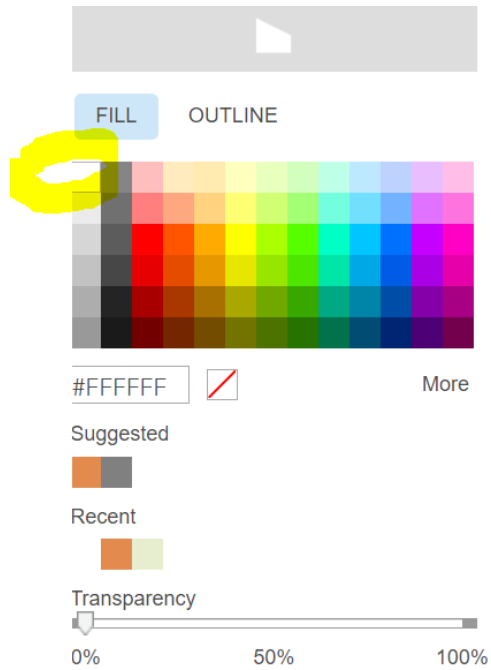
- Click **“OK”**- **“Done”**, you will see a map like this (after zooming in on an area):



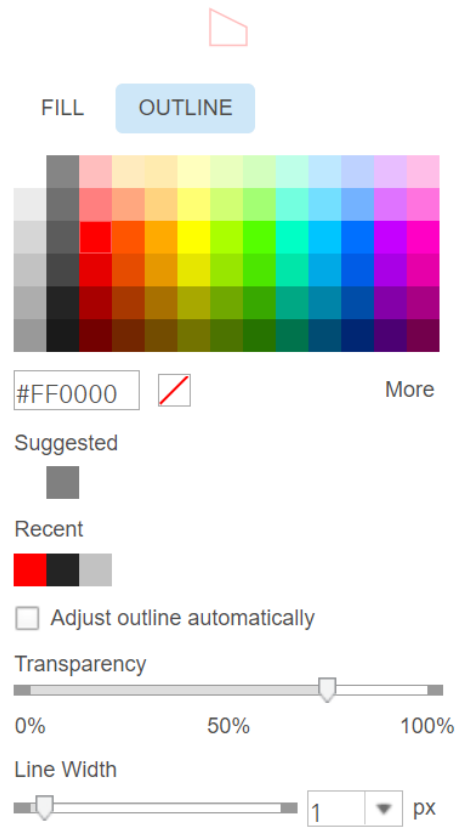
- To make the map more readable, let's see if we can add the DA boundaries to it. Check the box next to the layer **"DA boundaries Vancouver"** - **"Change Style"** icon below it, click on **"Options"** under Select a drawing style.
- Click on **"Symbols"**



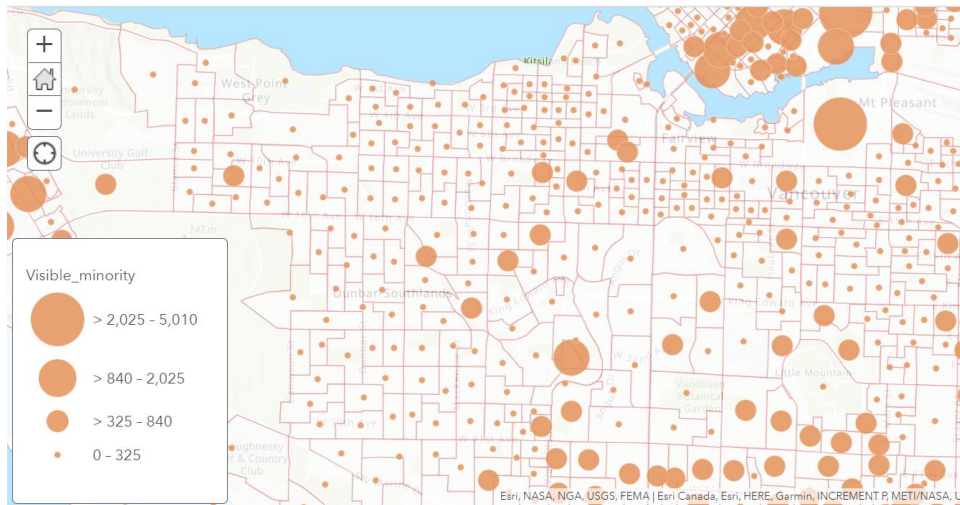
- Change the **"Fill"** color to clear,



- Change the **“Outline”** color to something not clear, like red or black.



- Click on **“Done”**, and you will see the map with the DA boundaries:



This type of map is called **“Proportional Symbol Map”**

Now, pause here for a second, do you think it’s right to map the total number of minority people for each DA?

6. **Mapping the percentage of minority people**

- Click on the **“Change Style”** icon below the Layer **DA boundaries VMinority Vancouver**.
- **Choose an attribute to show:** pick **Vminority\_Percentage**, which is the percentage of minority people for each DA.
- Select a **drawing style:**

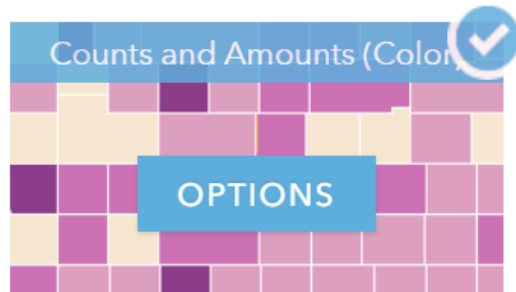
**Counts and Amounts (Color)** shows as the first one, pick it.

- Click on the **Options:**

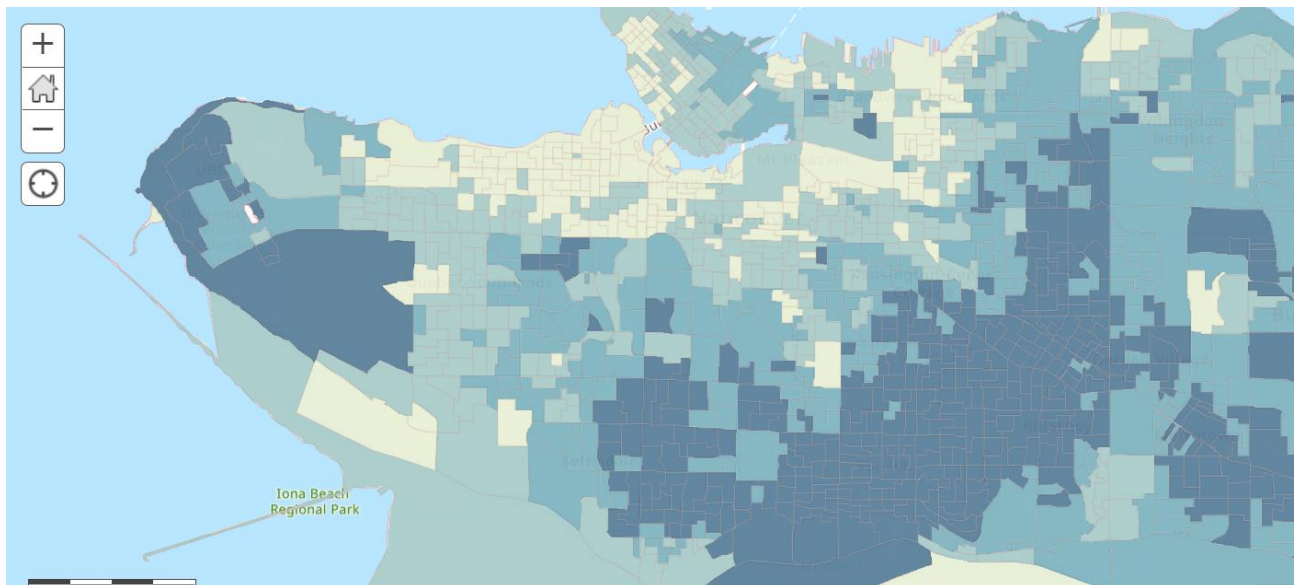
## Change Style

DA boundaries VMinority Vancou

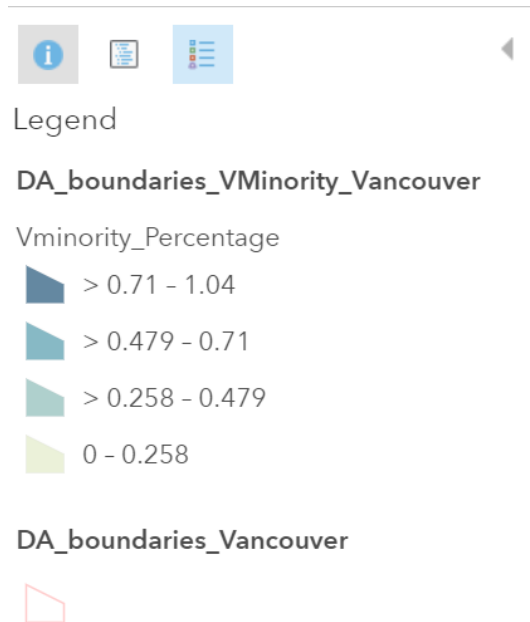
- 2** Select a drawing style  
Set default style



- Check the box **"Classify Data"**, and leave the default **Using Natural Breaks**, and **4 classes** as is.
- You will then see a map like this:



You may click on the "Legend" icon to read the legend:



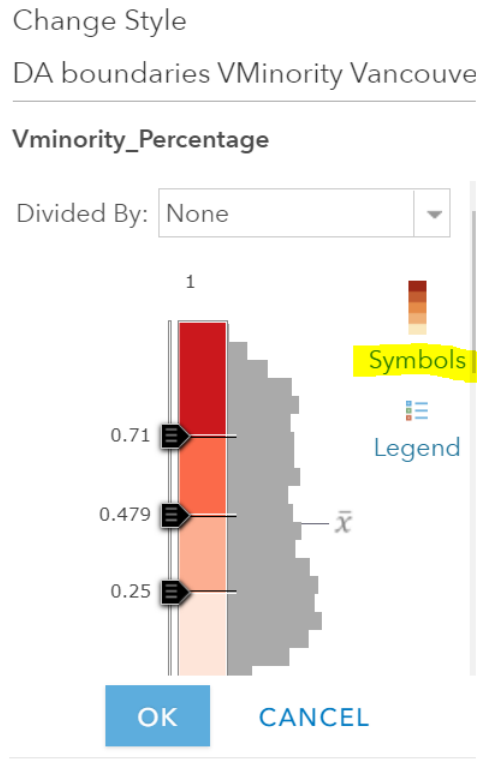
This type of map is called **“Choropleth Map”**.

#### 7. Play around with color hues of this map

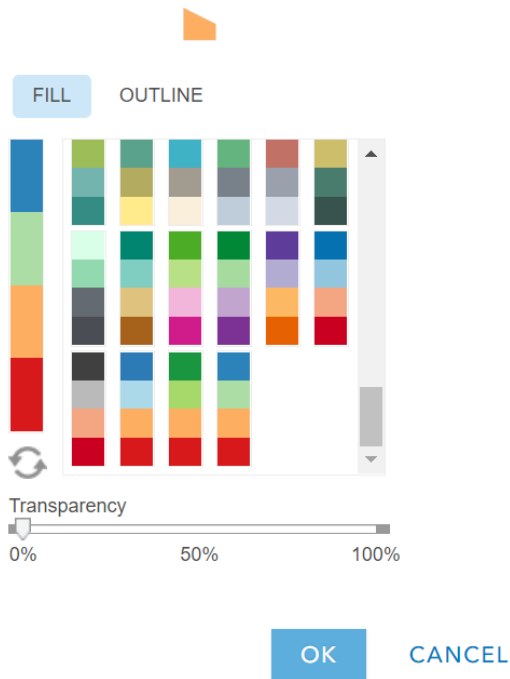
If you wish to change the color hues on this map, you can! But be careful about your choice of colors.

- Click on the **“Change Style”** icon below the Layer **DA boundaries VMinority Vancouver**.
- Choose **“Options”** under **Select a drawing style**
- Click on **“Symbols”**

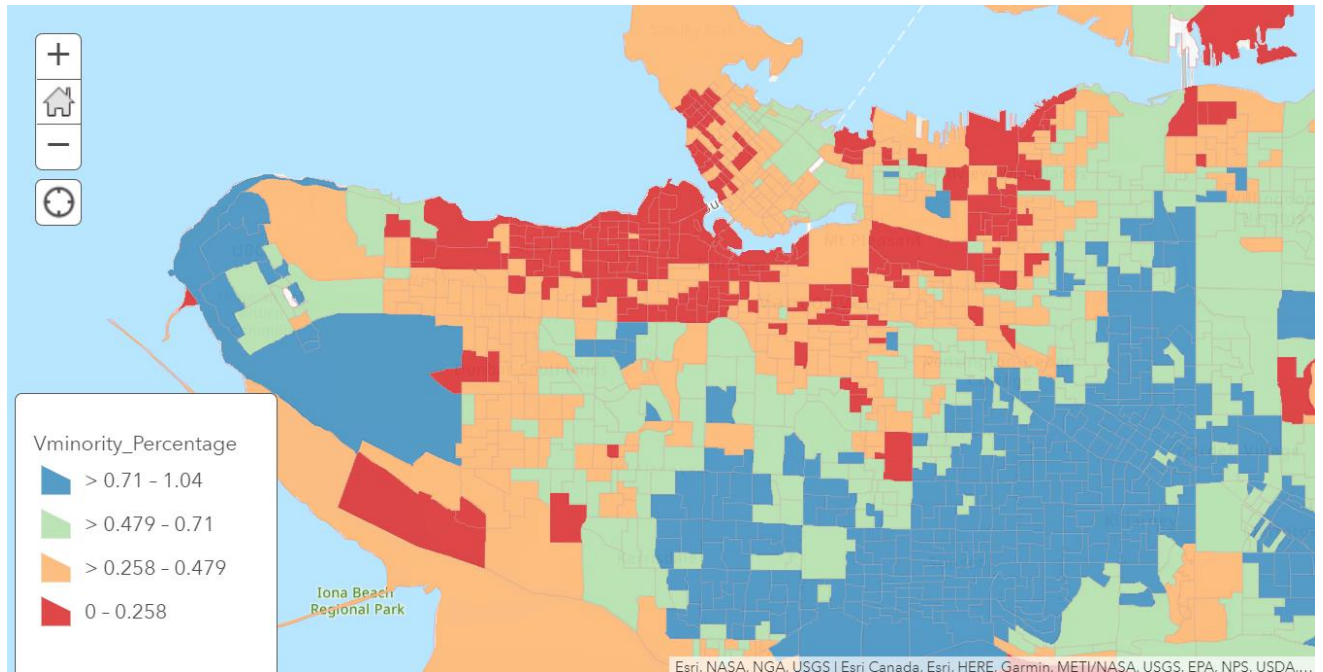




- Now you can choose a color palette you want. But be mindful of how your decision would influence how your users read your map!



For example, if you chose the last color palette (blue, green, pink, and red), do you think this would be good map?



## Section 2: Key concepts involved in this workshop

Attribute table

Attribute Join

Thematic Map

Choropleth Map

Proportional Symbol map

Symbolization

Normalization

**Appendix: Data resources (access and data manipulation):** If you are interested to know where I found the data used in this workshop, read on.

1. The Geographic file (shape file) for the DAs

The DA (Dissemination Area) boundaries file was downloaded from Statistics Canada's website: <https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2016-eng.cfm>

Choose ArcGIS (.shp) as the file format, and Cartographic Boundary File for Dissemination areas.

Given the large size of the file (it includes all the DAs in Canada), QGIS (a free and open source GIS software) was used to extract only the DAs in Metro Vancouver from the shape file. This is a two-step process: first select features by attribute table, and second save the selected features to a new shape file. If you wish to learn about this process, refer to this guide:

[https://www.qgistutorials.com/en/docs/working\\_with\\_attributes.html](https://www.qgistutorials.com/en/docs/working_with_attributes.html)

2. Visible minority people and population in Greater Vancouver

The dataset (in .csv format) was downloaded from [CHASS Canadian Census Analyzer](#), a database provided by the SFU Library (note that the access is restricted to SFU affiliated users). The data is also publicly available from Stats Can's website <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E> , but you may have to spend some time formatting the data in a way that allows easy mapping.

### Notes on software

For SFU faculty members, students, and staff, if you wish to explore ArcGIS Online in full functionality, please send email to [gis-software@sfu.ca](mailto:gis-software@sfu.ca) to request a SFU organizational ArcGIS Online account. Please note that ArcGIS Online, while more user-friendly and easier to learn, offers less analytical power or cartographic options than Desktop GIS applications, for example, ArcGIS Pro.

To public members, if this workshop inspires you to learn more about making maps in GIS, there is some free and open-source GIS applications, for example, [QGIS](#).