(https://docs.qgis.org/3.28/en/docs/user_manual/index.html)

Practical 3:

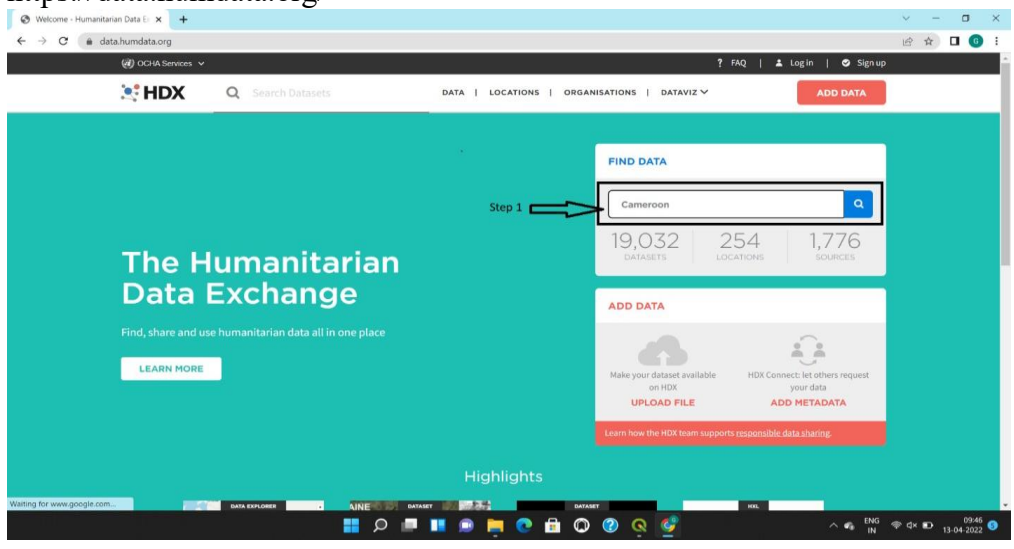
1. Install QGIS plugins: plugins - Manage and install plugins.
2. Search OpenLayers plugin and install it.
3. Same way install QuickMap Service plugin.
4. Add the base layer Map: Go to–> Web- ->QuickMapServices–> Esri–> ESRI Satellite
5. Adding our vector data: To input data you'll go to the icons on the far left and click on "Add Delimited Text Layer". Or you can click on Layer-> Add Layer-> Add Delimited Text Layer.
6. You'll browse to the file with your data. Make sure that csv is selected for File format.
7. Additionally, make sure that X field represents the column for your longitude points and Y field for latitude.
8. You can leave everything else as default and click ok.
9. For GPS coordinates, as the data we are using here, you need to select WGS 84 ESPG 43126.
10. You'll right click on the layer with our data in the Layer Panel, in this case our layer: 2017_ecuador_ysi_dat.. and select properties
11. The are many styles you can choose for the layer and the styling options are located in the Style tab of the Properties dialogue
12. We'll use Graduated which allows you to break down the data in unique classes. Here we will use the salinity values and will classify them into 3 classes: low, medium, and high salinity. There are 5 modes available in the Graduated style to do this: Equal interval, Quantile, Natural breaks, Standard deviation and Pretty breaks. You can read more about these options in qgis documentation.
13. In the Style section: Select->Graduated, in Column->salinity psu, and in color ramp we'll do colors ranging from yellow to red.
14. In the classes box write down 3 and select mode–>Quantile. Click on classify, and QGIS will classify your values in different ranges.
15. Now, I am going to get rid of the black outline to make the points easy to visualize. Select the point by clicking on Simple Marker and in Outline style select the No Pen. Do the same for the remaining two points.
16. Print Composer: making a final map: We can start to assemble the final version of our map. QGIS has the option to create a Print composer where you can edit your map. Go to Project -> New Print composer.
17. You will be prompted to enter a title for the composer, enter the title name and hit ok. You will be taken to the Composer window.

Practical 4:

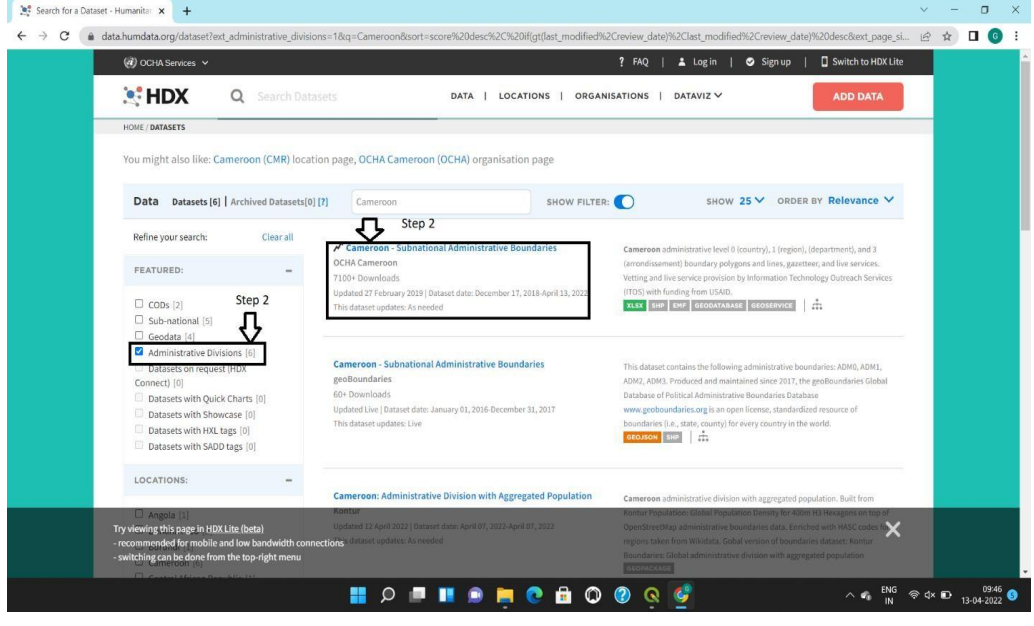
GIS Data Capture Service by Third Party Organizations classifies as primary data (https://www.aabsys.com/services/gis-services/gis-data-capture-services/)
Secondary Data available at naturalearthdata.com, both raster and vector data is available

Practical 6:

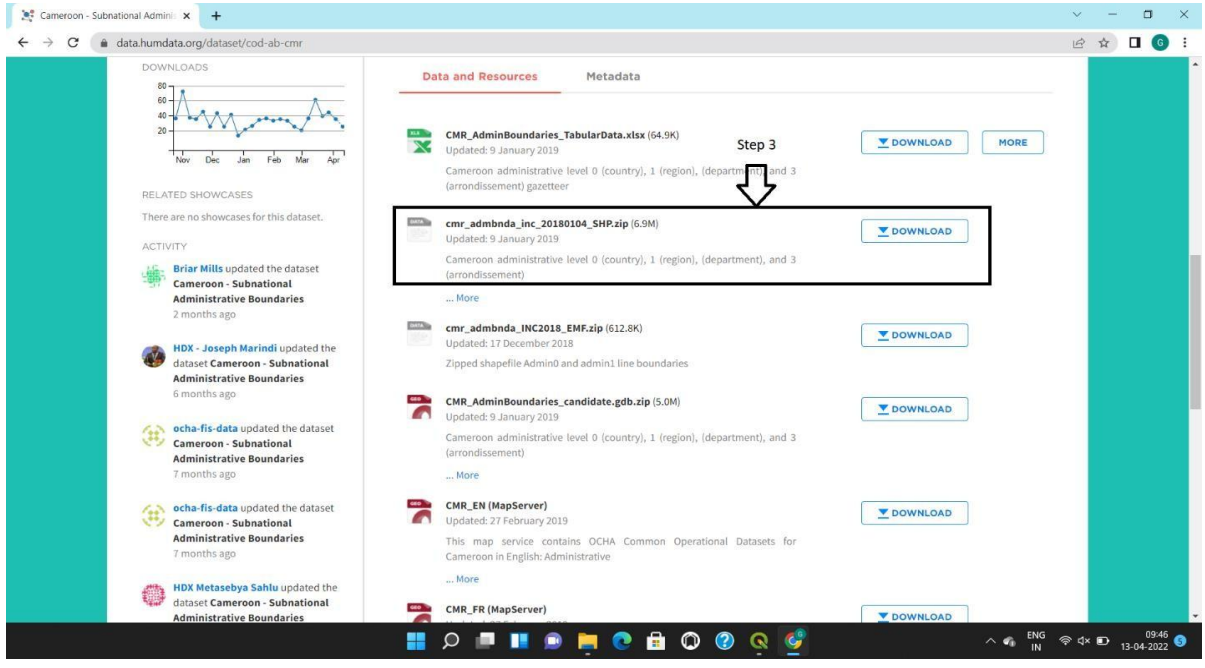
1. Download the shape files of COVID-19 data for Cameroon from https://data.humdata.org/



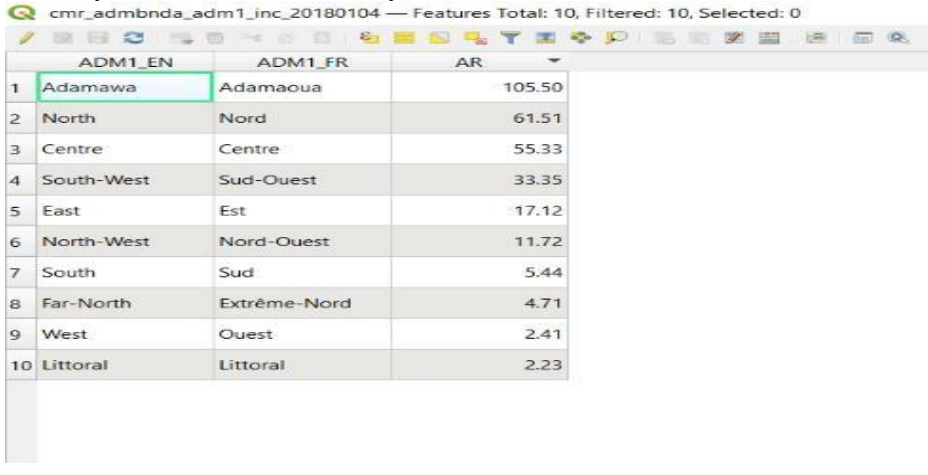
2. Check checkbox i.e, Administrative divisions from featured section and click on "Cameroon - Subnational Administrative Boundaries".



3. Click on download button.

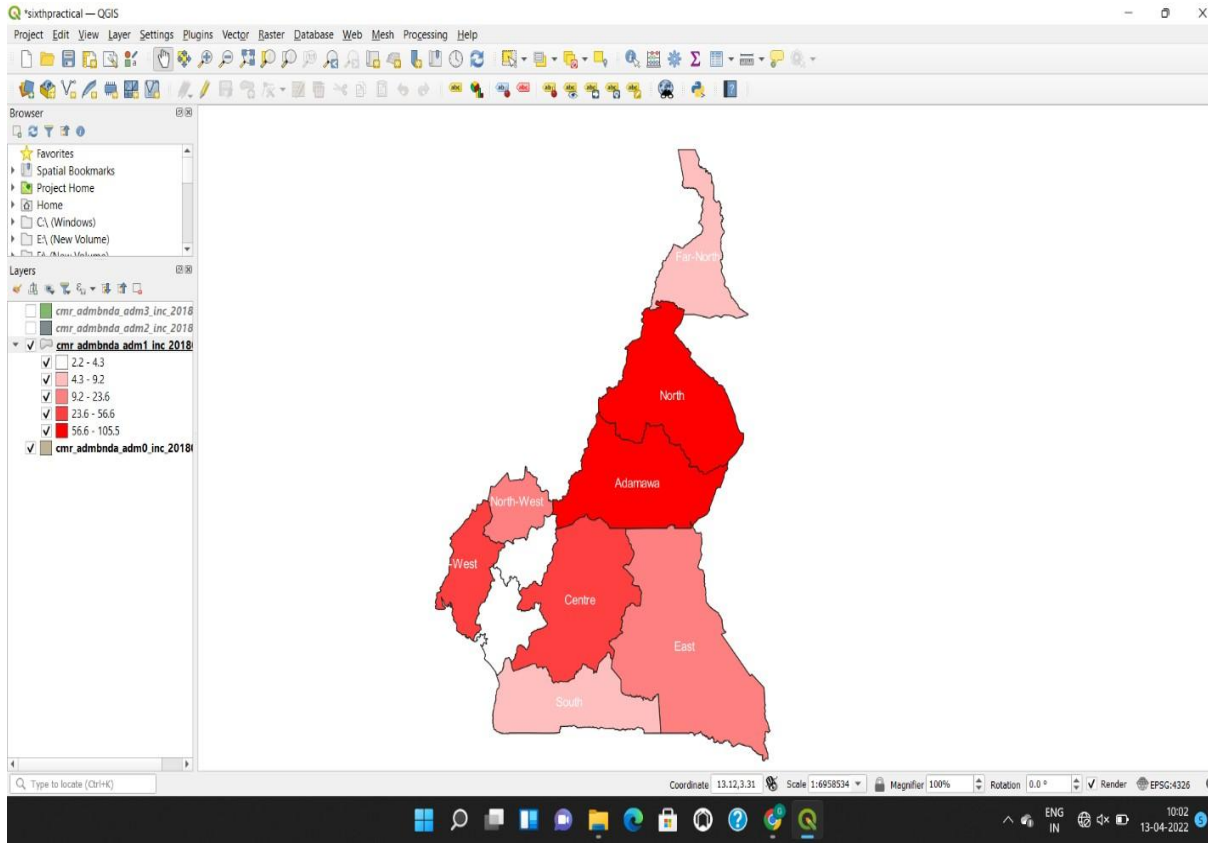


4. Create new project in QGIS and drag these downloaded shape files into the project.
5. Classify the Cameroon country data on the basis of COVID-19 attack rate.



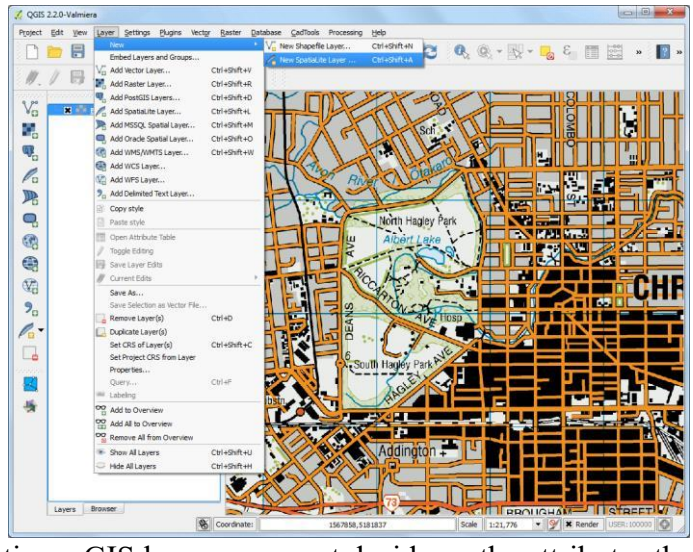
	ADM1_EN	ADM1_FR	AR
1	Adamawa	Adamaoua	105.50
2	North	Nord	61.51
3	Centre	Centre	55.33
4	South-West	Sud-Ouest	33.35
5	East	Est	17.12
6	North-West	Nord-Ouest	11.72
7	South	Sud	5.44
8	Far-North	Extrême-Nord	4.71
9	West	Ouest	2.41
10	Littoral	Littoral	2.23

6. Different countries get classify into the groups on the basis of “Attack rate”.

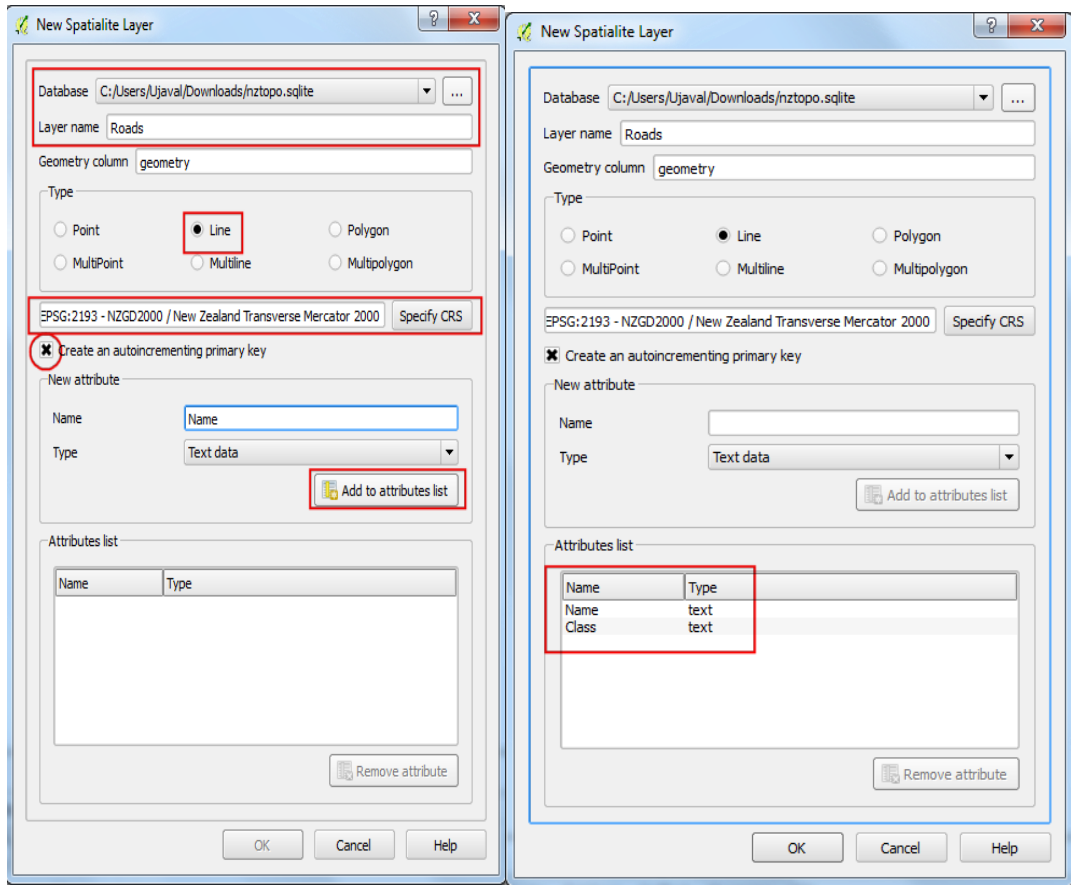


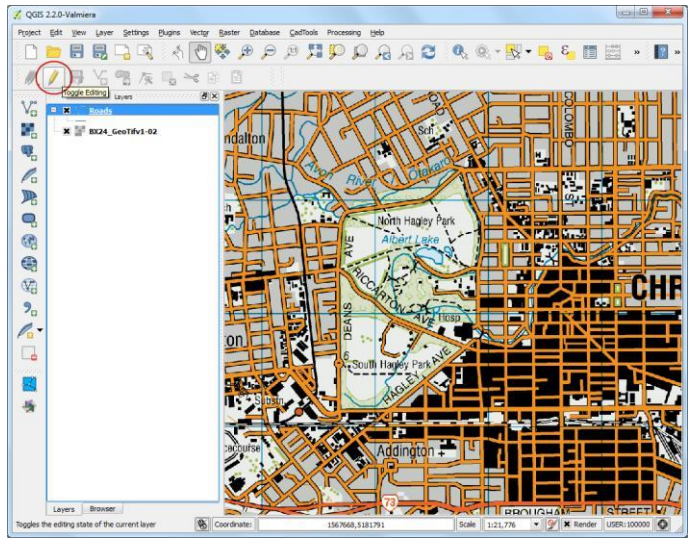
Practical 7

1. Go to Layer ▸ Add Raster Layer. Locate the .tif file and click Open.
2. Select Layer ▸ New ▸ New Spatialite Spatialite is an open database format similar to ESRI's geodatabase format. Spatialite database is contained within a single file on your hard drive and can contain diferent types of spatial (point, line, polygon) as well as non-spatial layers.

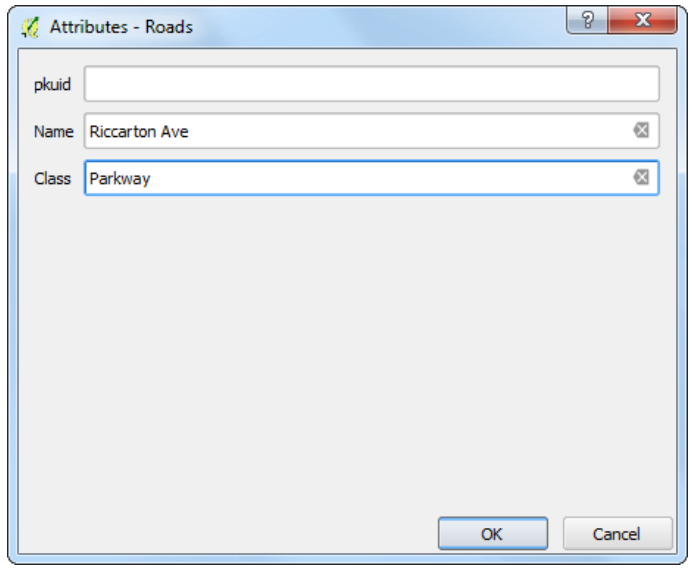


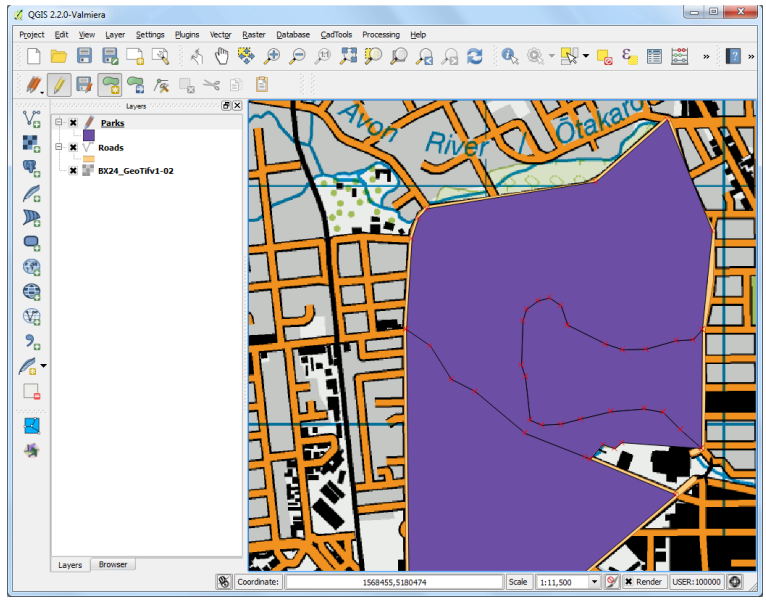
3. When creating a GIS layer, you must decide on the attributes that each feature will have. Since this is a roads layer, we will have 2 basic attributes - Name and Class. Enter Name as the Name of the attribute in the New attribute section and click Add to attribute list.

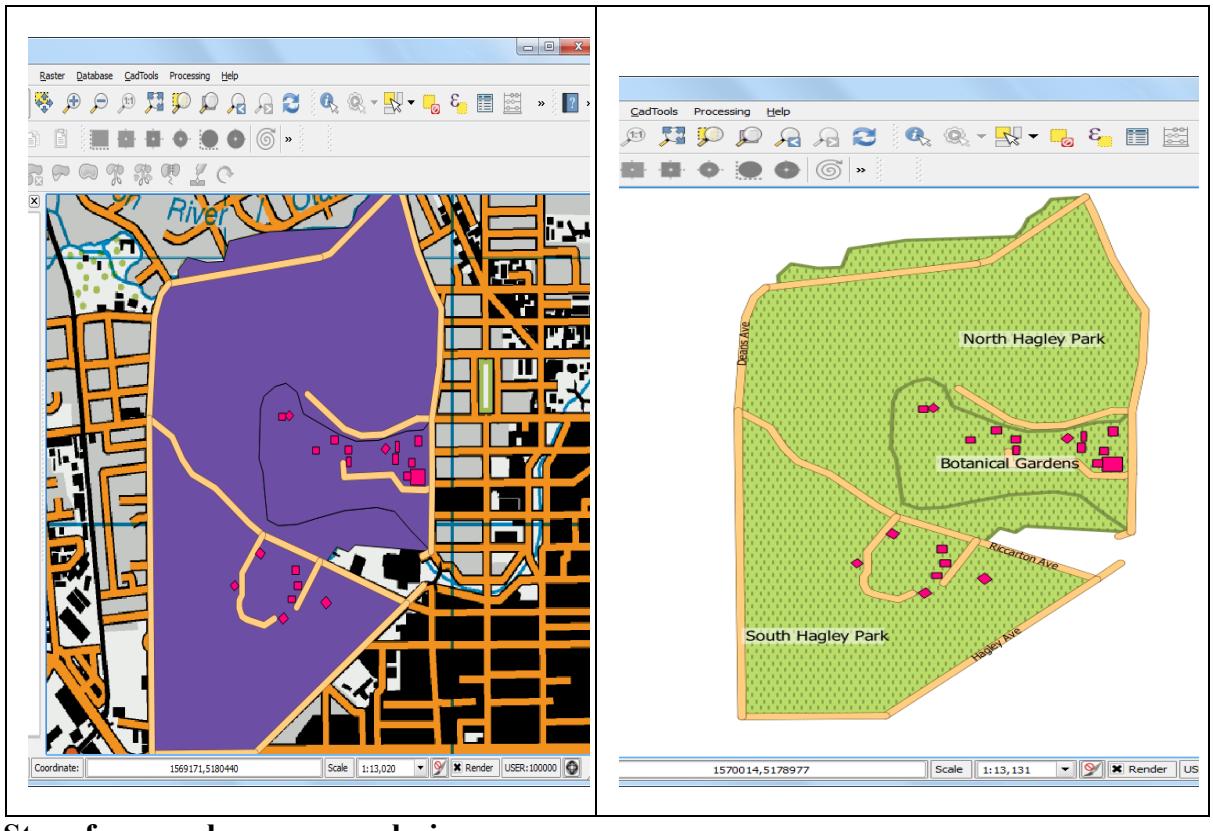
4. 

5. Similarly create a new attribute Class of the type Text data. Click OK.
6. Once the layer is loaded, click the Toggle Editing button to put the layer in editing mode.
7. 

8. Click the Add feature button. Click on the map canvas to add a new vertex. Add new vertices along the road feature. Once you have digitized a road segment, right-click to end the feature
9. After you right-click to end the feature, you will get a pop-up dialog called Attributes. Here you can enter attributes of the newly created feature. Since the **pkuid** is an autoincrementing field, you will not be able to enter a value manually. Leave it blank and enter the road name as it appears on the topo map. Optionally, assign a Road Class value as well. Click OK.

10. 

11. The default style of the new line layer is a thin line. Let's change it so we can better see the digitized features on the canvas. Right click the Roads layer and select Properties.
12. Select the Style tab in the Layer Properties dialog. Choose a thicker line style such as Primary from the predefined styles. Click OK.
13. Now you will see the digitized road feature clearly. Click Save Layer Edits to commit the new feature to disk.
14. 

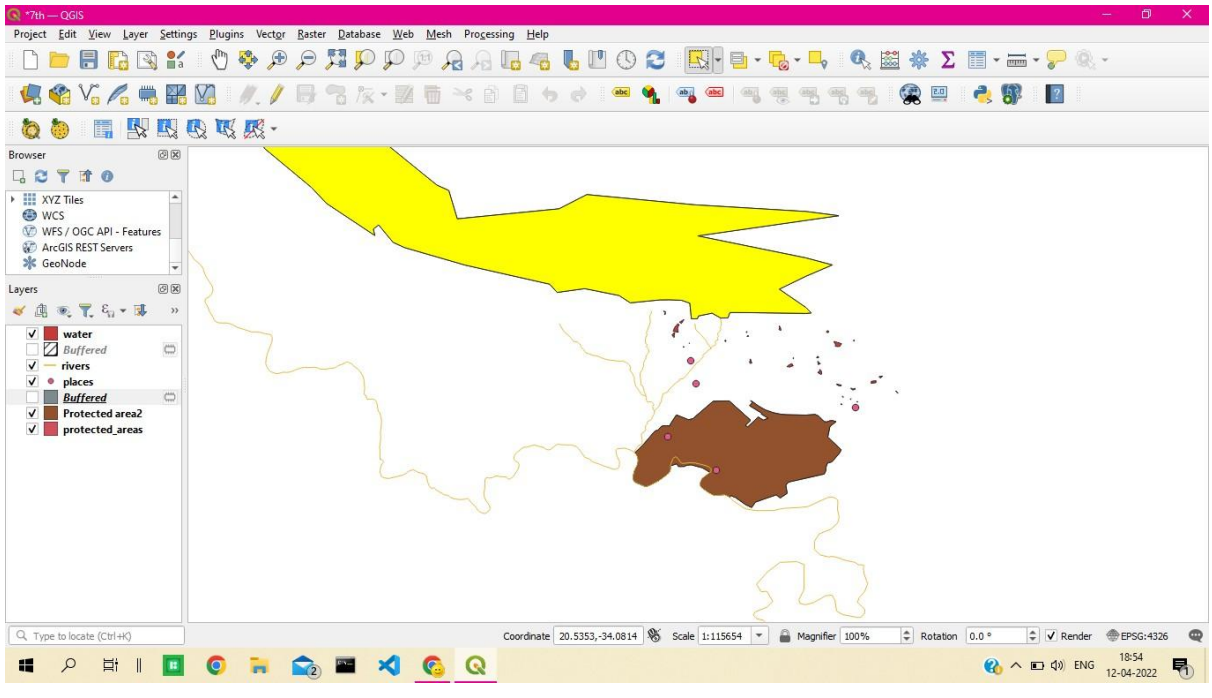


Steps for complex query analysis:

1. Once you have downloaded the data, open QGIS. Go to Layer ▸ Add Vector Layer.

2. Click Browse and navigate to the folder where you downloaded the zip files.

3. You will be asked to choose a layer Select .shp files and click OK. Repeat the same for other one. You will see both the shapefiles now loaded in QGIS



4. We will be created buffers around the point and line layers. The *Buffer* geoprocessing tool in QGIS uses *layer units* to calculate buffer distances. The layers we have are in *Geographic Coordinate Reference System (CRS)* with the unit of *degrees*. To achive this, we must reproject our layers to a *Projected Coordinate*

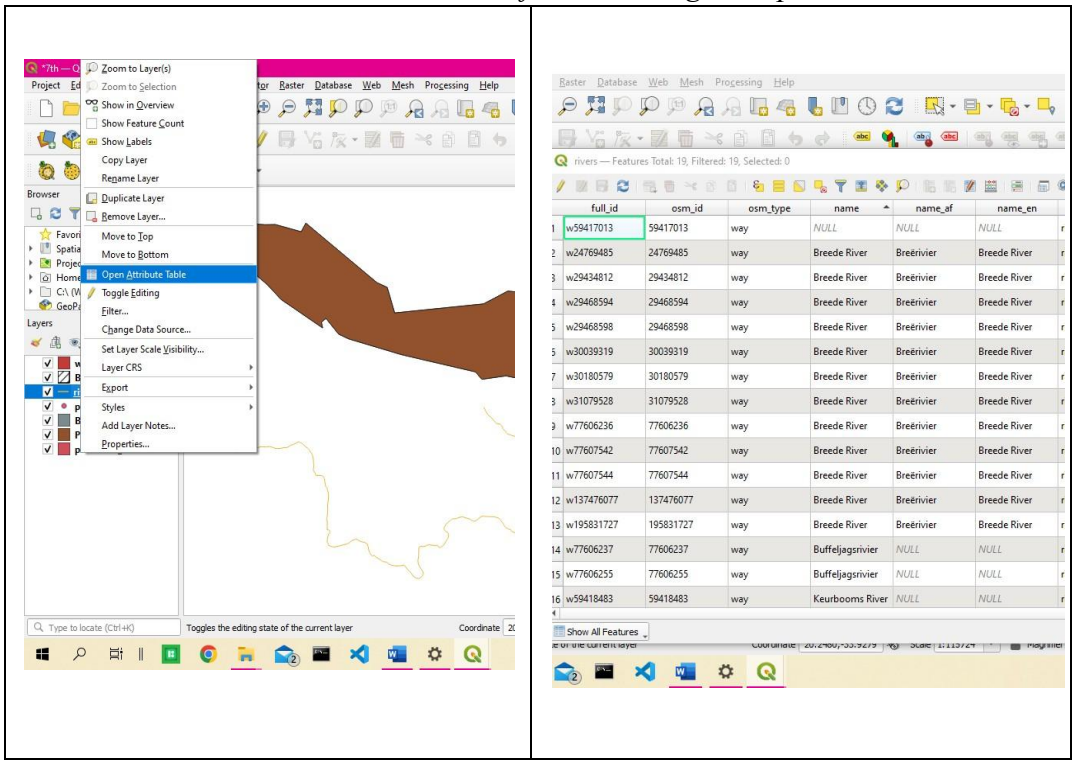
Reference System (CRS). Right-click on the one of the simple layer and choose Save As -> file location name as reprojected.shp>click on browse next to CRS. Repeat the same for next file.

5. Now you will have 4 layers in your Layers Panel. Un-check the boxes next to the original layers to display only the re-projected layers.

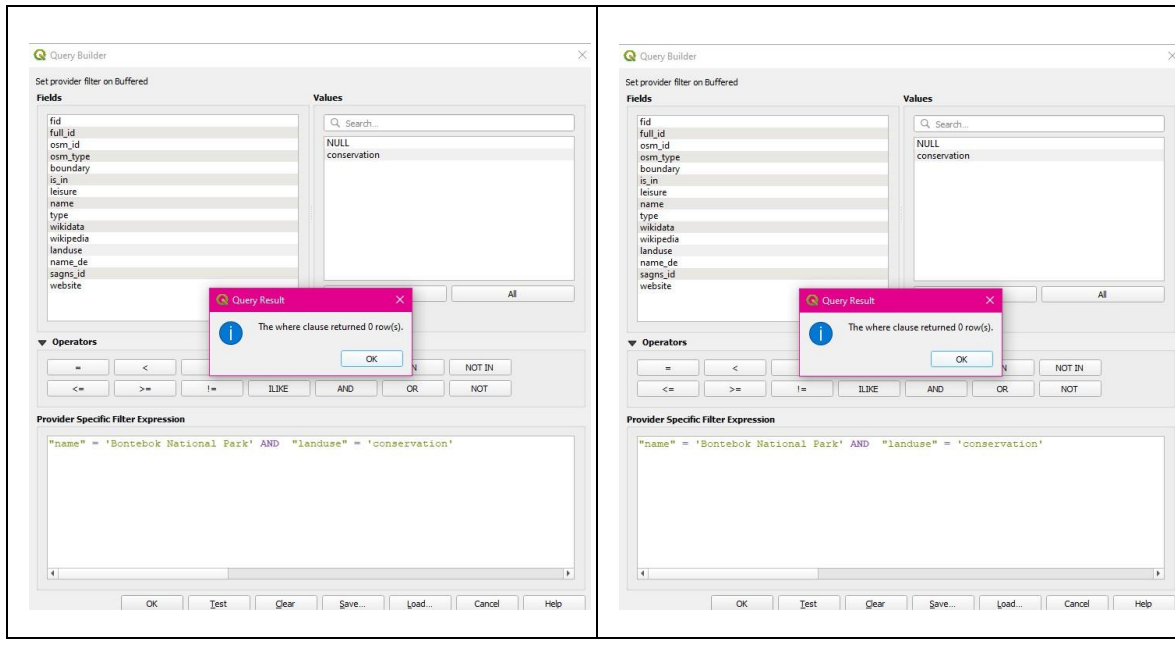
6. Now you will see the data in the layer's CRS. We will now create buffers for both the datasets. Click Vector ▸ Geoprocessing Tools ▸ Buffer.

7. The rivers_lake_buffer contains features that are both rivers as well as lakes. Our analysis calls for using only river features, so we will run a query to select only river features. Rightclick on the rivers_lake_buffer layer and select Open Attribute Table.

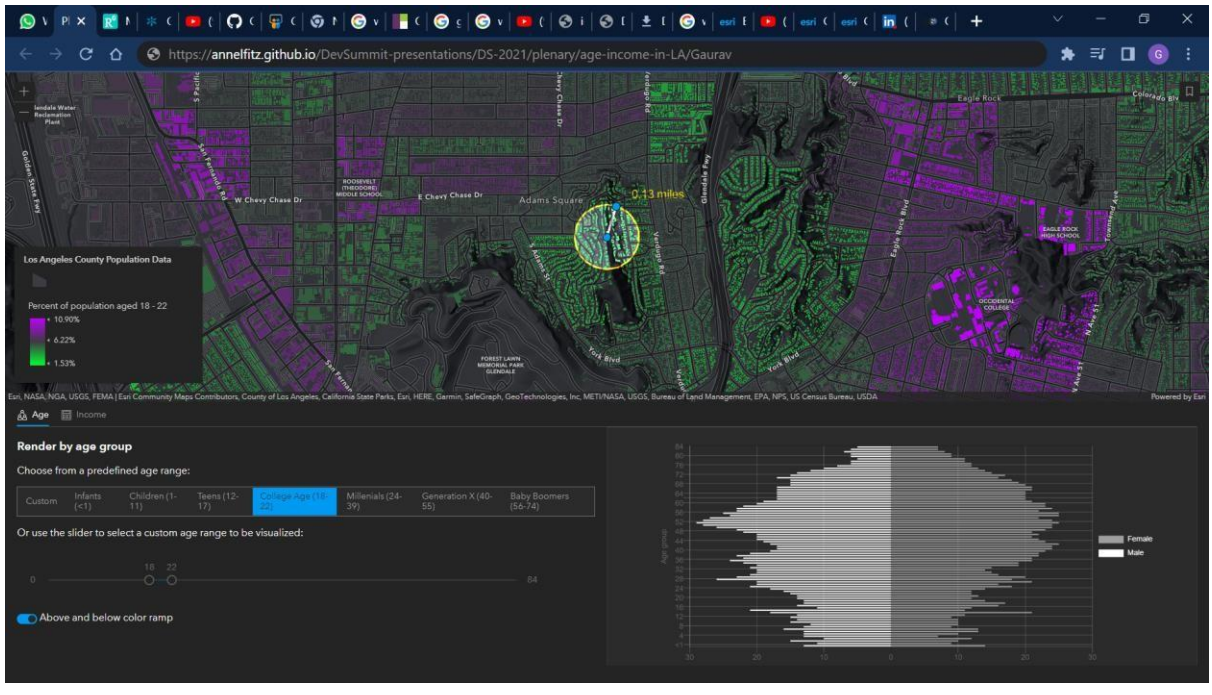
8. You will see that the *name* attribute contains the information we can use to select the river features. Click on *Select features using an expression* button.

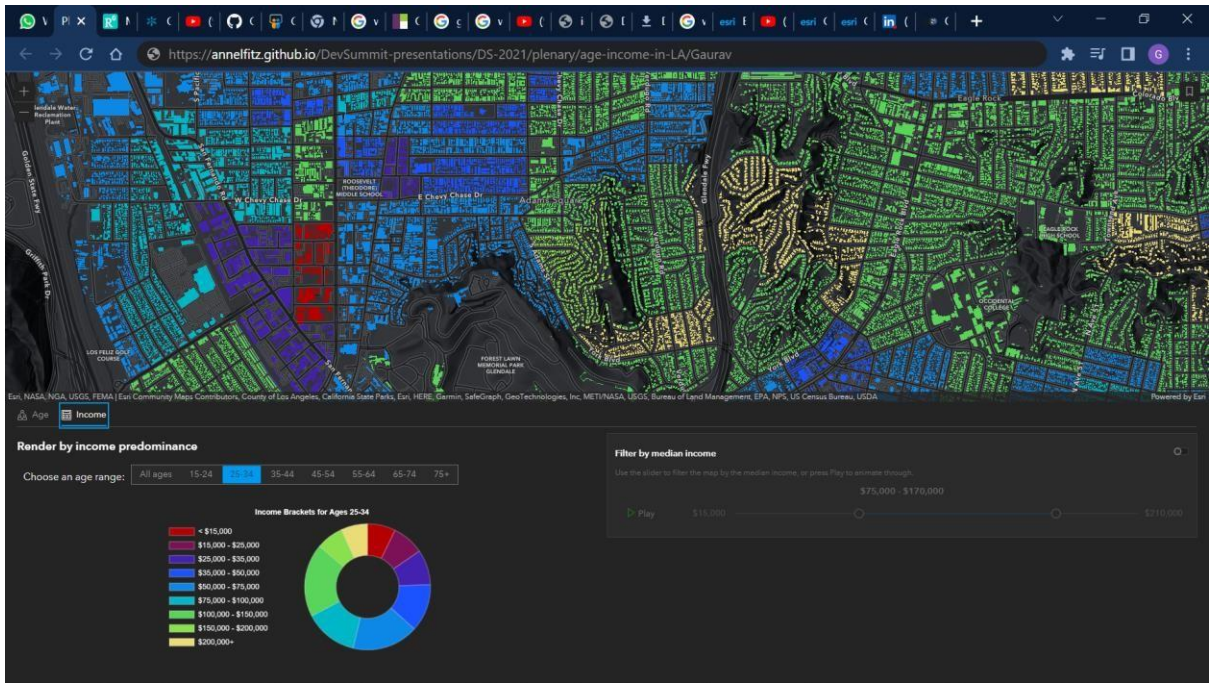


9. Now we are ready to perform the spatial query. You need to enable the *Spatial Query plugin* to use this functionality. See Using Plugins for more details. Once enabled, go to Vector ▸ Spatial Query ▸ Spatial Query. Enter the expression *"Name" = "River"* and click Select and then click Close to back to the main QGIS window.


Query Builder
Set provider filter on Buffered
Fields
Values
fid
full_id
osm_id
osm_type
boundary
is_in
leisure
name
type
wikidata
wikipedia
landuse
name_de
sagns_id
website
NULL
conservation
Query Result
The where clause returned 0 row(s).
OK
Operators
Provider Specific Filter Expression
"name" = 'Bontebok National Park' AND "landuse" = 'conservation'
Test
Clear
Save...
Load...
Cancel
Help

Practical 8


https://annelfitz.github.io/DevSummit-presentations/DS-2021/plenary/age-income-in-LA/Gaurav
Los Angeles County Population Data
Percent of population aged 18 - 22
10.90%
6.22%
1.53%
0.13 miles
Adams Square
Age
Income
Render by age group
Choose from a predefined age range:
Custom
Infants (<1)
Children (1-11)
Teens (12-17)
College Age (18-22)
Millenials (24-39)
Generation X (40-55)
Baby Boomers (56-74)
Or use the slider to select a custom age range to be visualized:
Above and below color ramp
Female
Male



Practical 9

Working on dynamic WEBGIS :

function queryLayerViewAgeStats (buffer)

const query = featureLayerView.createQuery(); query.outStatistics = statDefinitions; // defined earlier from each of the age

query.geometry = buffer;

// Query the features on the client using FeatureLayerView.queryFeatures return featureLayerView

.queryFeatures (query)

.then(function (results) {

// Parse results

// Return information, seperated by gender

return [femaleAgeData, maleAgeData;

})

for (let age = low; age <= high; age++) {

str +=

"Number($feature.MAGE" +

age +

"_CY), Number($feature.FAGE" +

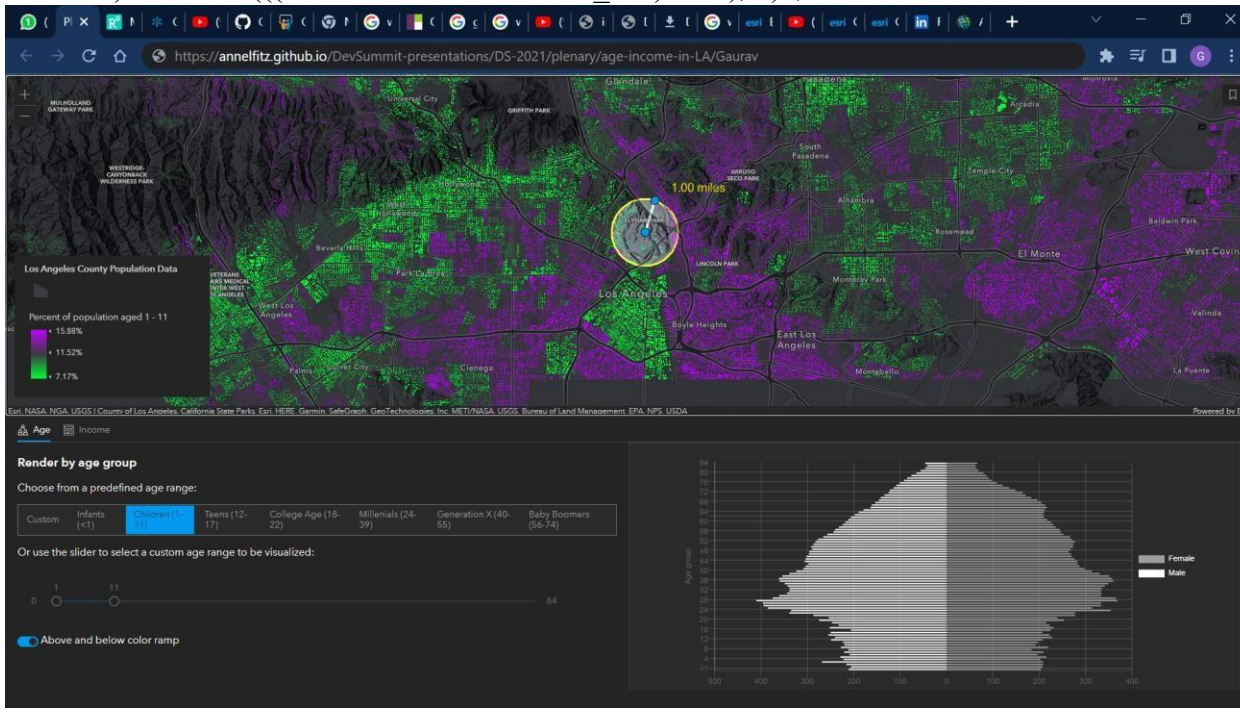
age +

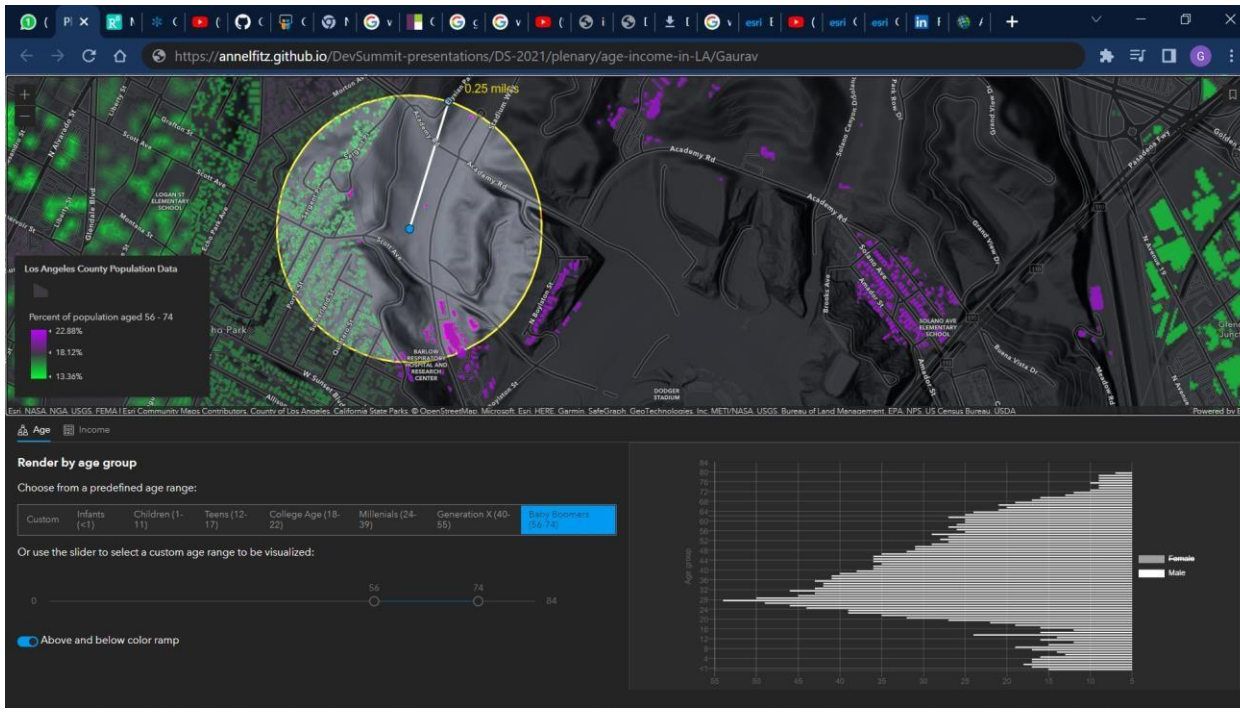
"_CY)";

if (age != high) { str += ",";

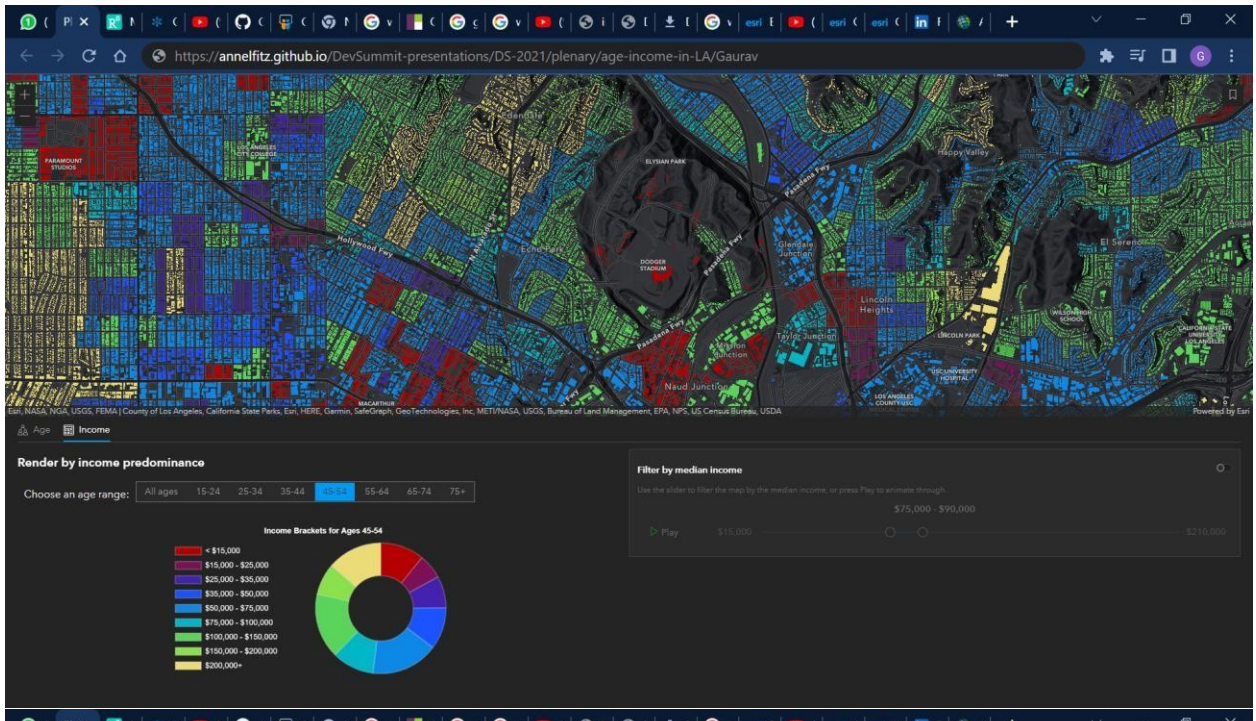
}

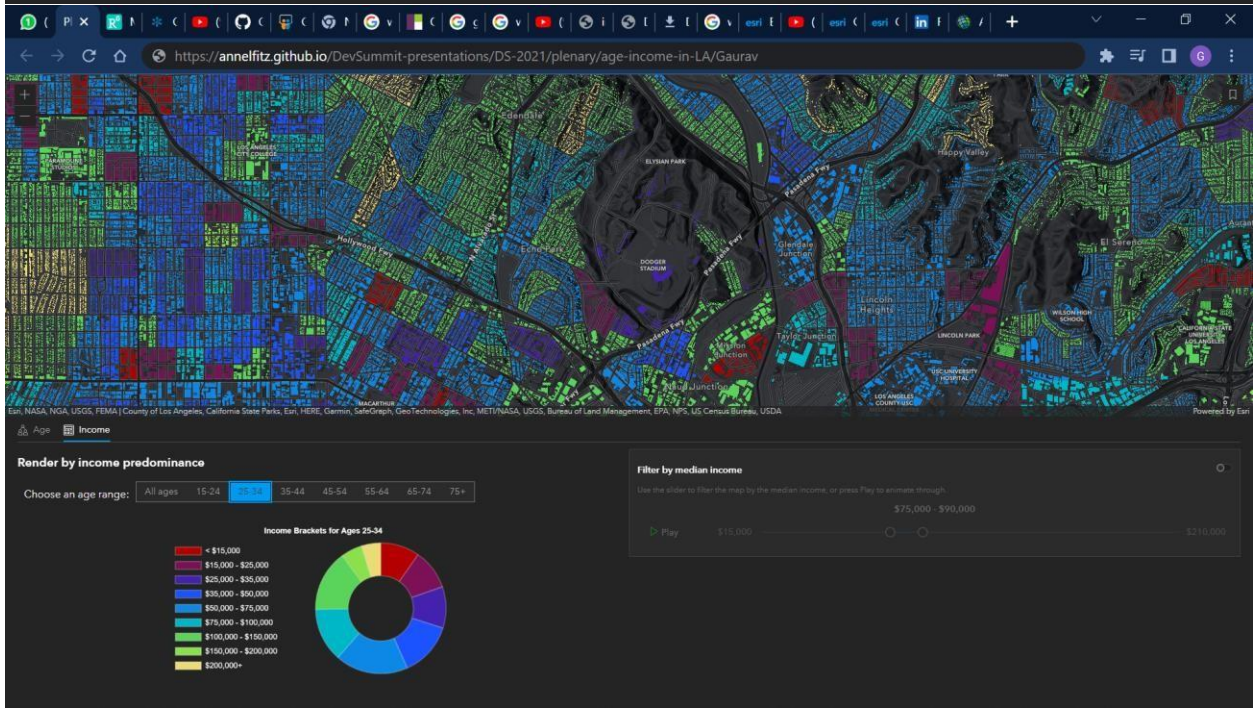
str + ")\n Round (((TOT/$feature. TOTPOP_CY)*100), 2)";



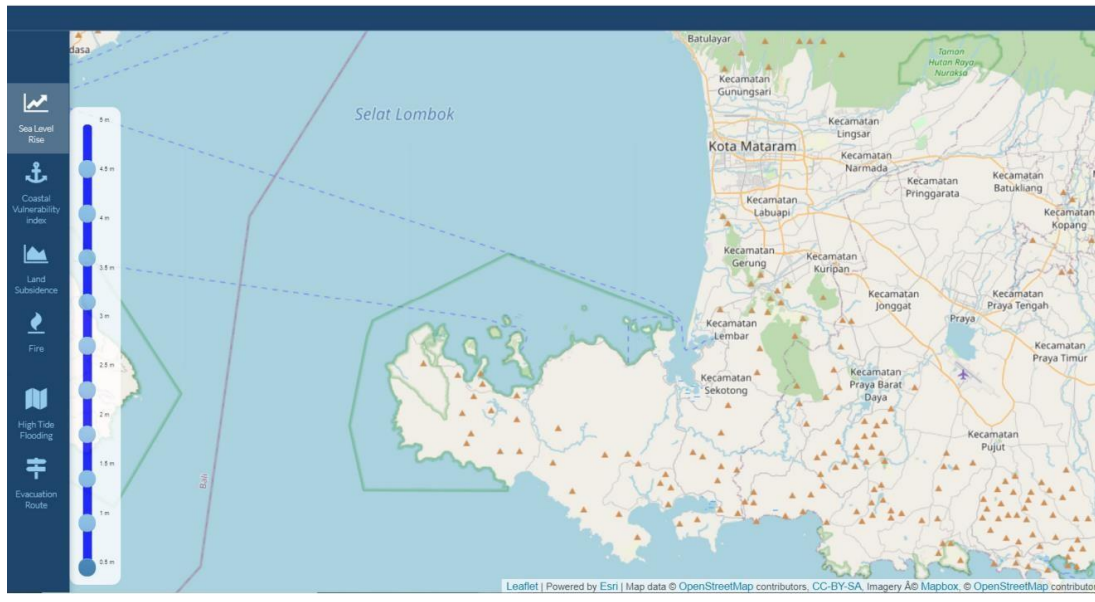


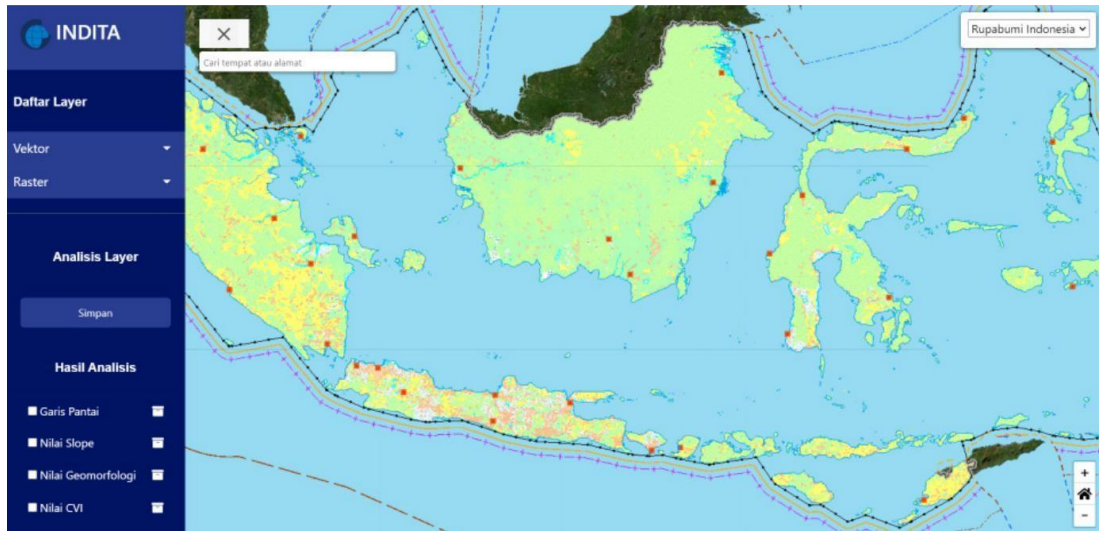

```
function createEffect(min, max) {

    featureLayerView.effect = {

        filter: {

            where: "MEDHINC_CY > " + min + " AND MEDHINC_CY < " + max
        },
        includedEffect: "bloom (150 %, 1px, 0.2) saturate (200%)",
excludedEffect: "blur(1px) brightness (65%)"

    }
}
```





Practical 10


Sea Level Rise
Coastal Vulnerability Index
Land Subsidence
Fire
High Tide Flooding
Evacuation Route
Selat Lombok
Batulayar
Kecamatan Gunungsari
Kecamatan Lingsar
Kota Mataram
Kecamatan Narmada
Kecamatan Pringgarata
Kecamatan Batukliang
Kecamatan Labuapi
Kecamatan Kopang
Kecamatan Gerung
Kecamatan Kuripan
Kecamatan Jonggat
Kecamatan Praya Tengah
Praya
Kecamatan Lembar
Kecamatan Praya Timur
Kecamatan Sekotong
Kecamatan Praya Barat Daya
Kecamatan Pujut
Leaflet | Powered by Esri | Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox, © OpenStreetMap contributors


INDITA
Daftar Layer
Vektor
Raster
Analisis Layer
Simpan
Hasil Analisis
Garis Pantai
Nilai Slope
Nilai Geomorfologi
Nilai CVI
Cari tempat atau alamat
Rupabumi Indonesia