

QGIS Practical Manual 2026

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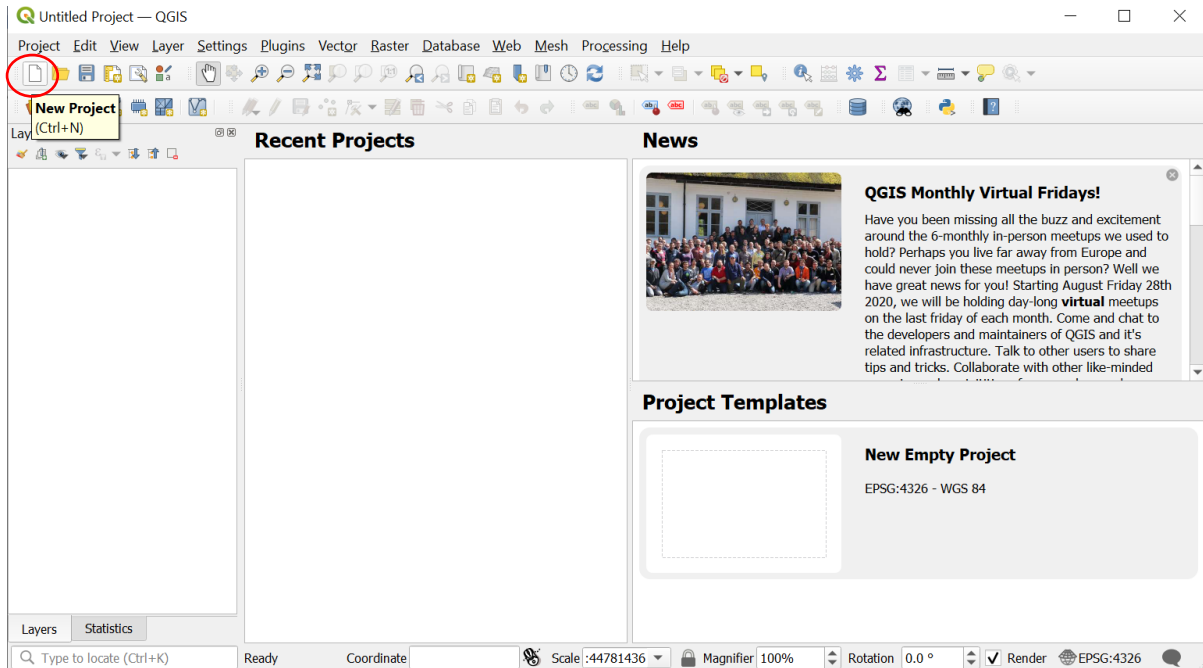
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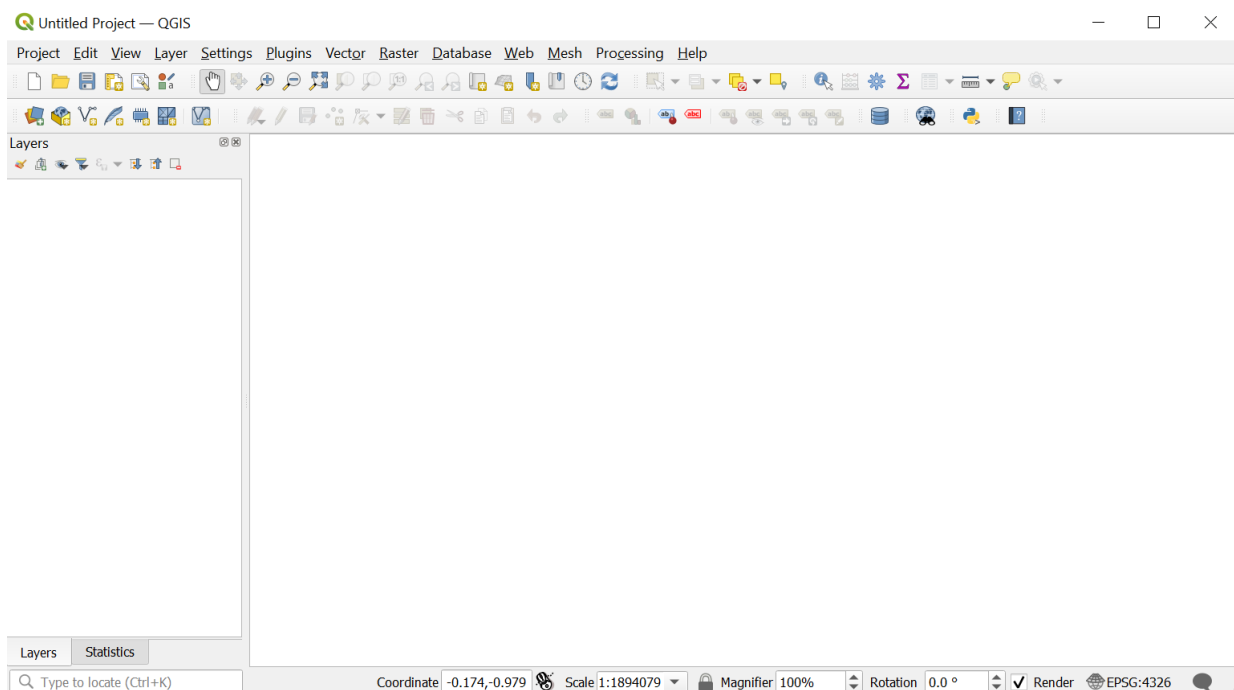
1. Opening QGIS Blank Map

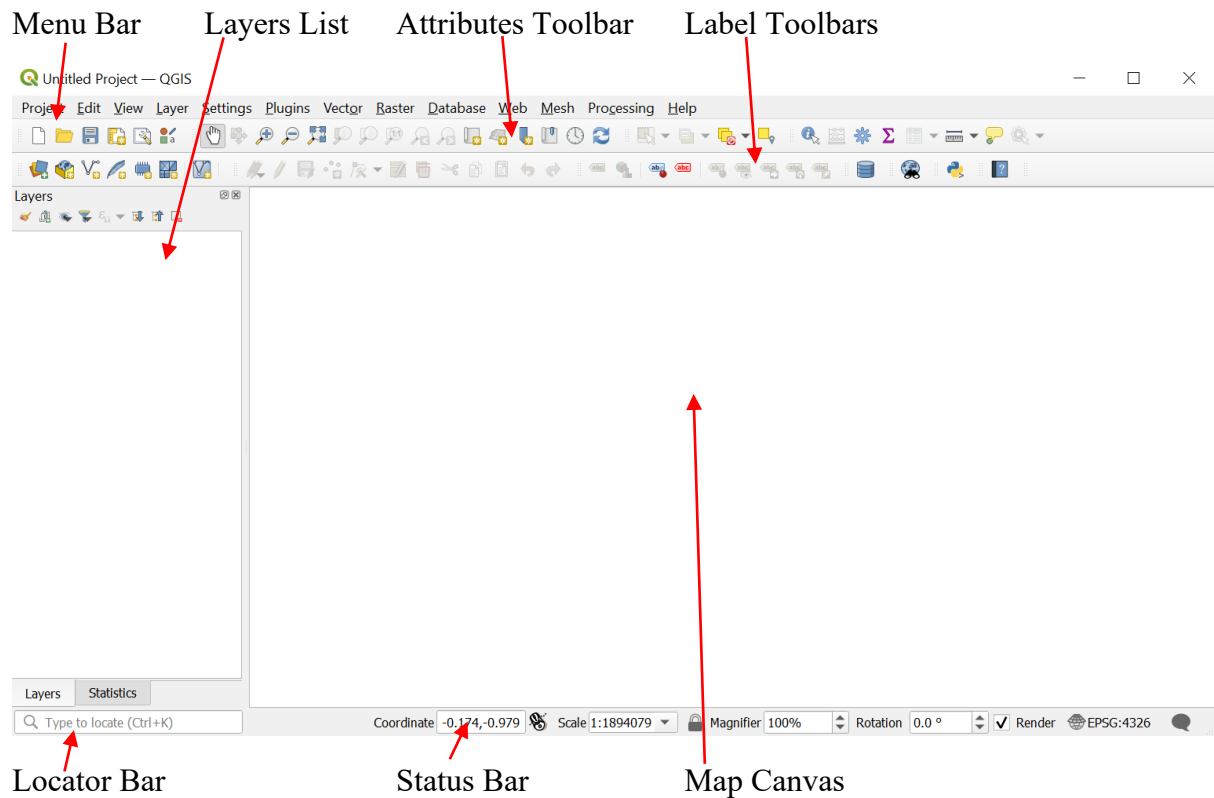
Type QGIS on the search space near Start icon, then click QGIS Desktop 3.44.12.

The following window will pop up after few seconds. Then Click on New Project as shown below.



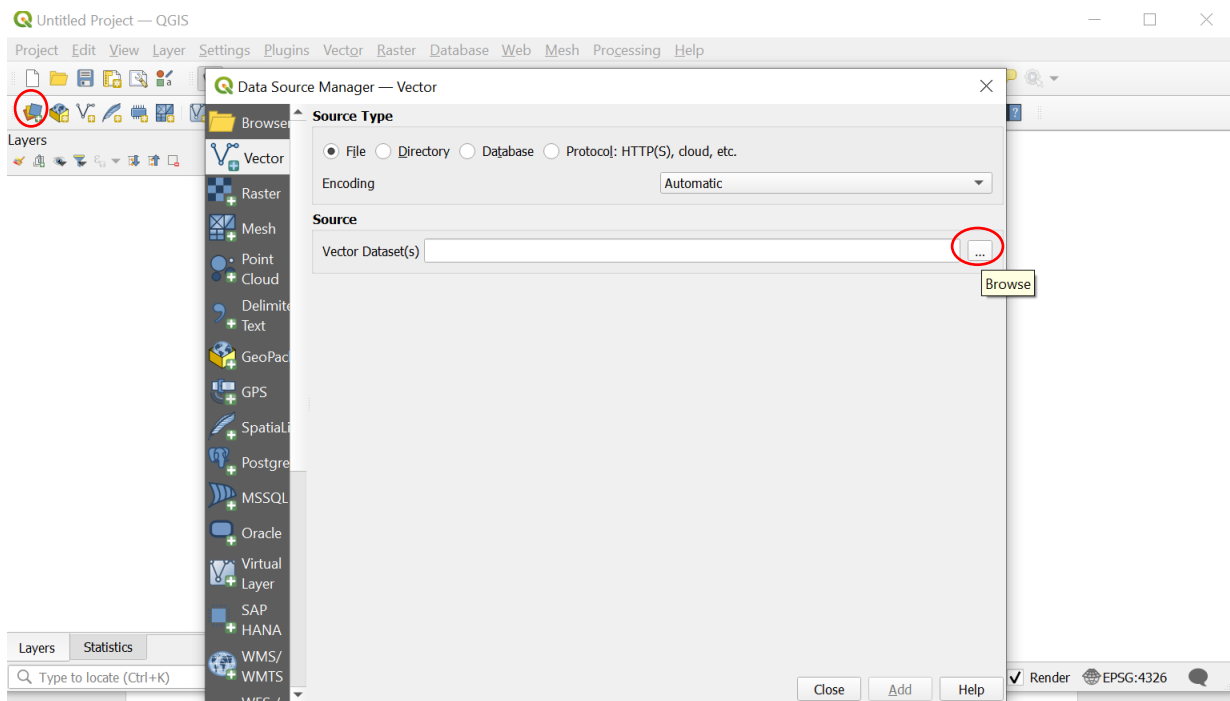
A new QGIS Blank Map will pop up.



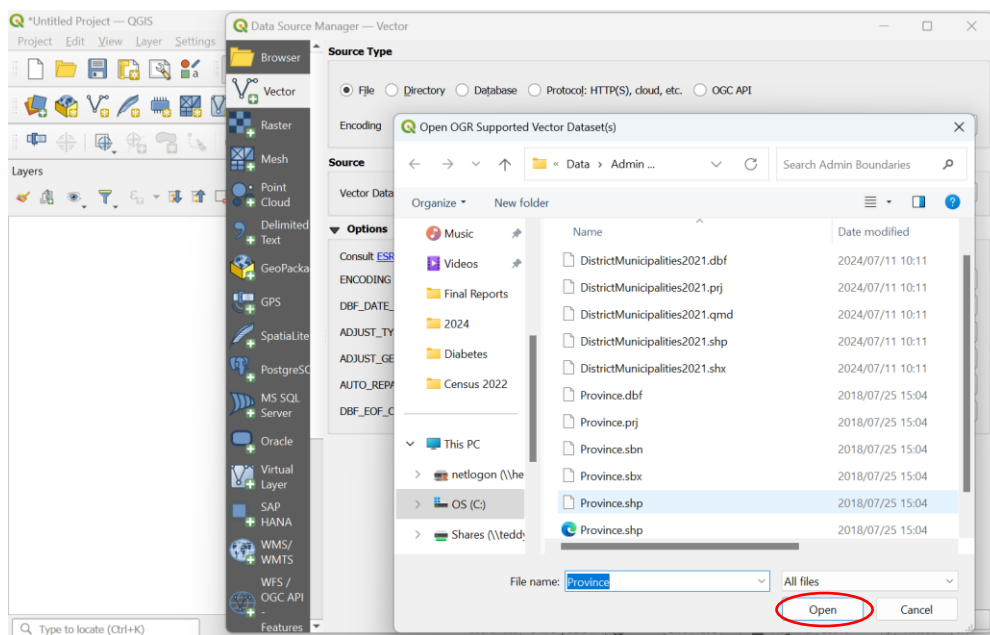


2. Adding Layers

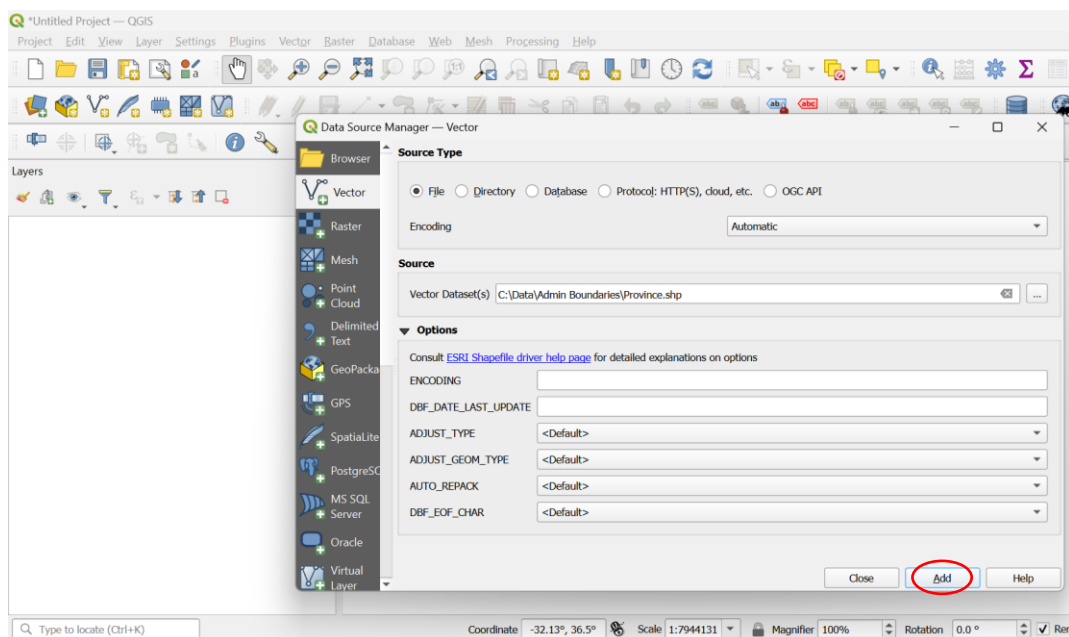
Click on Data Source Manager icon , then for Vector Dataset, click on Browse icon  to browse where you have saved the Data.



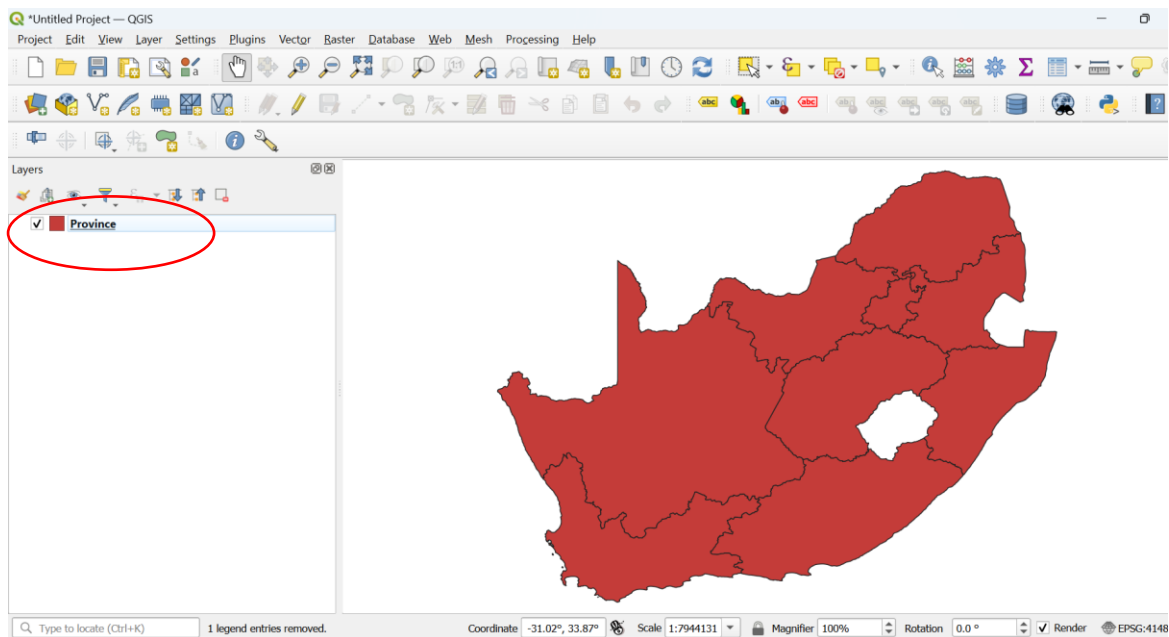
Add Province layer from Admin Boundaries folder. To do this, double click on Data, then double click on Admin Boundaries and then click on Province.shp as shown below and click Open.



Then click Add when the following window pops up.

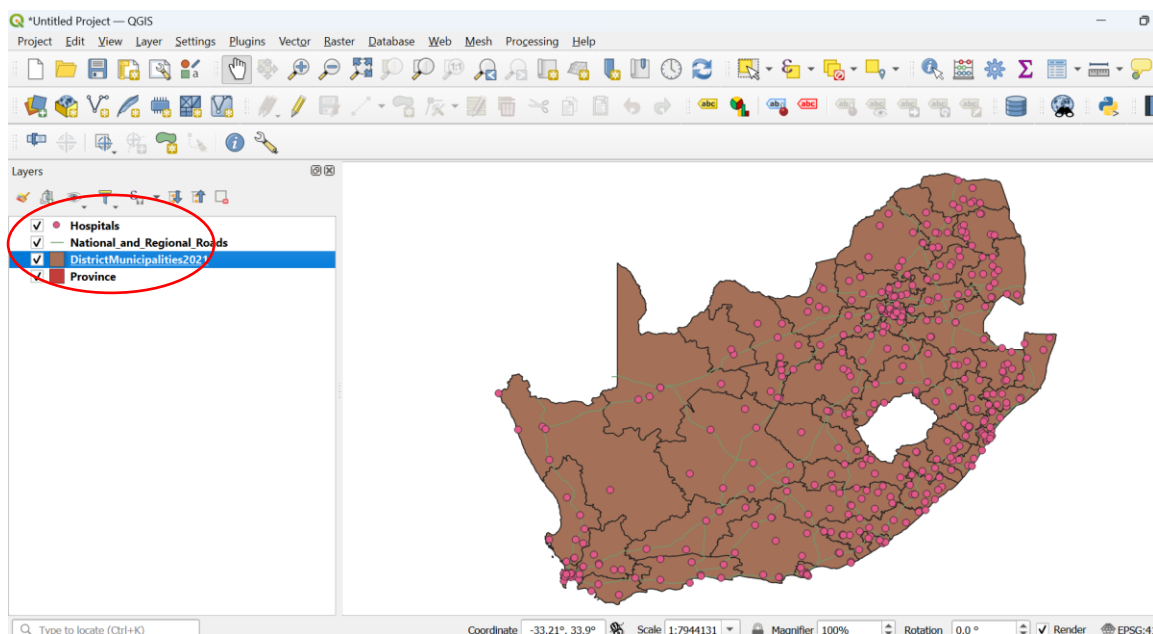


New window with Province map will show. Note that Province layer has also been added under Layers List.



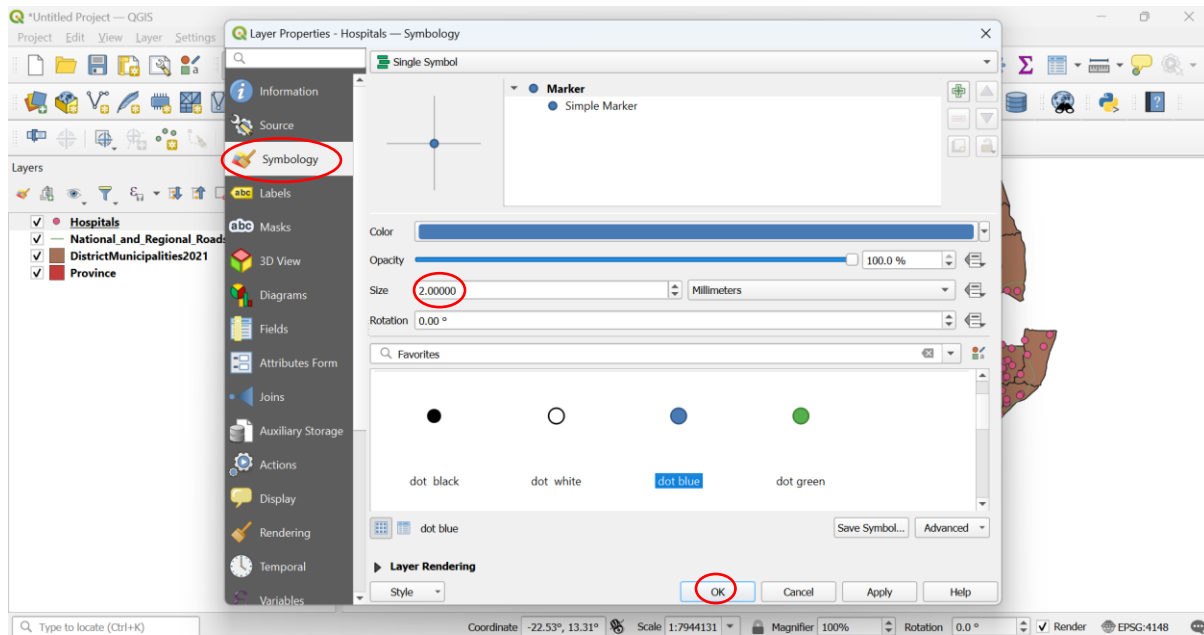
3. Displaying Points, Lines, Polygons And Their Symbology

Follow the same steps of adding a layer to add Hospitals.shp (points), National_and_Regional_Roads.shp (lines) and DistrictMunicipalities2021.shp (polygon). Note that all these layers are now showing under Layers List.

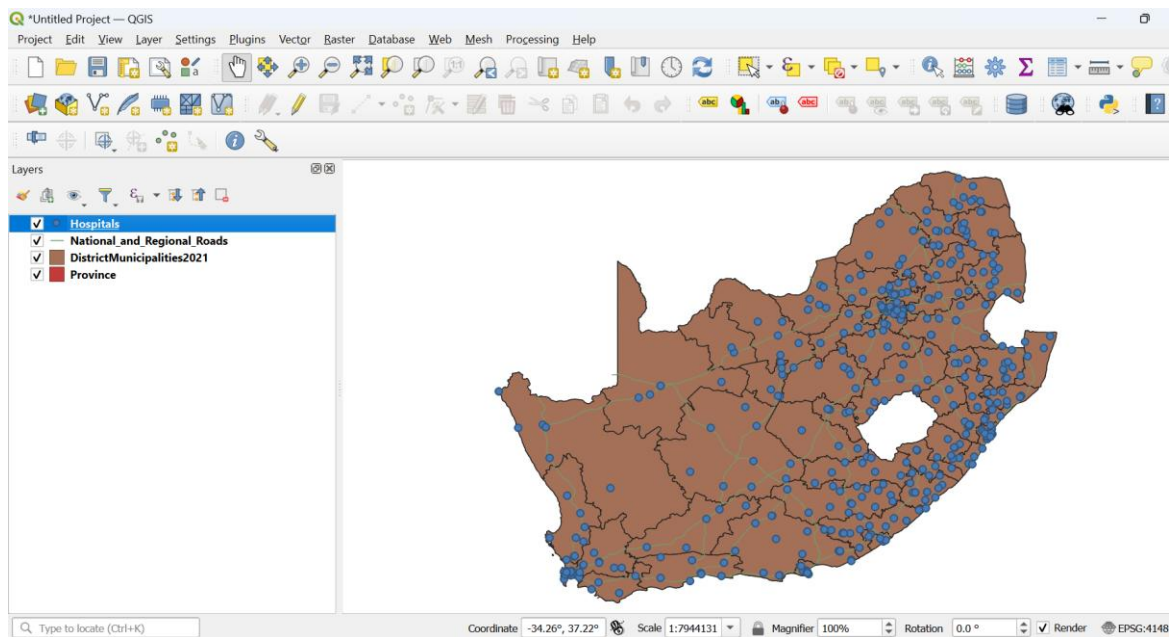


For changing symbology or colour for Hospitals, right-click on Hospitals layer under Layers List and then select properties. Then click on Symbology icon  when the following window

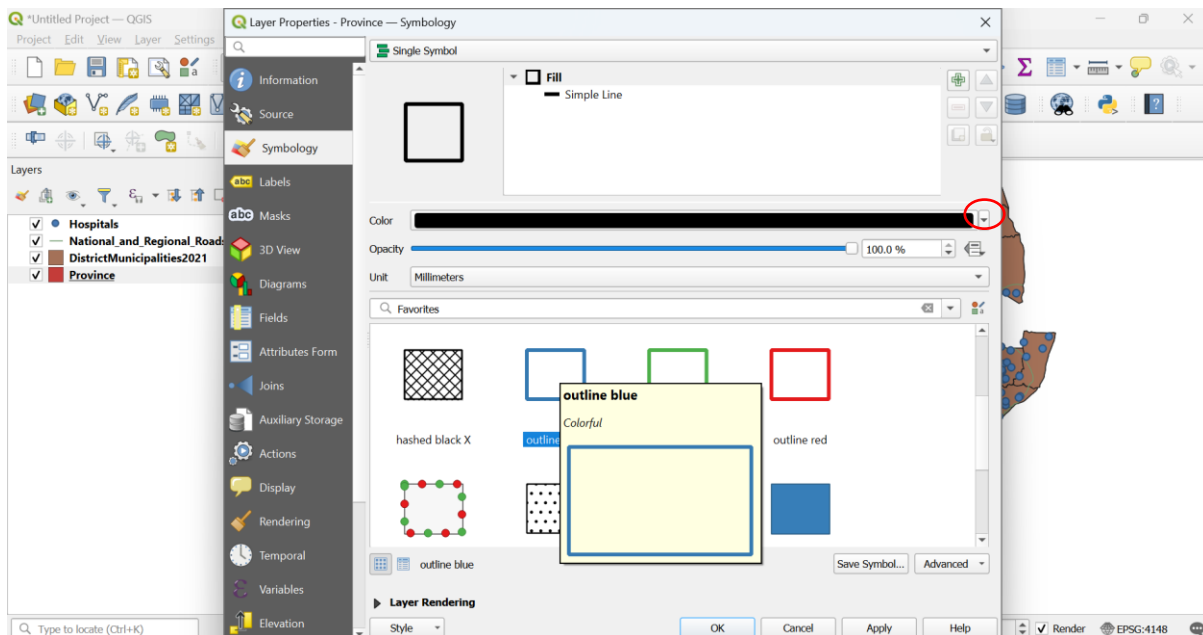
pops up. Select Blue dot from list of symbols and click on it, change size to 2.000 and then click Ok.



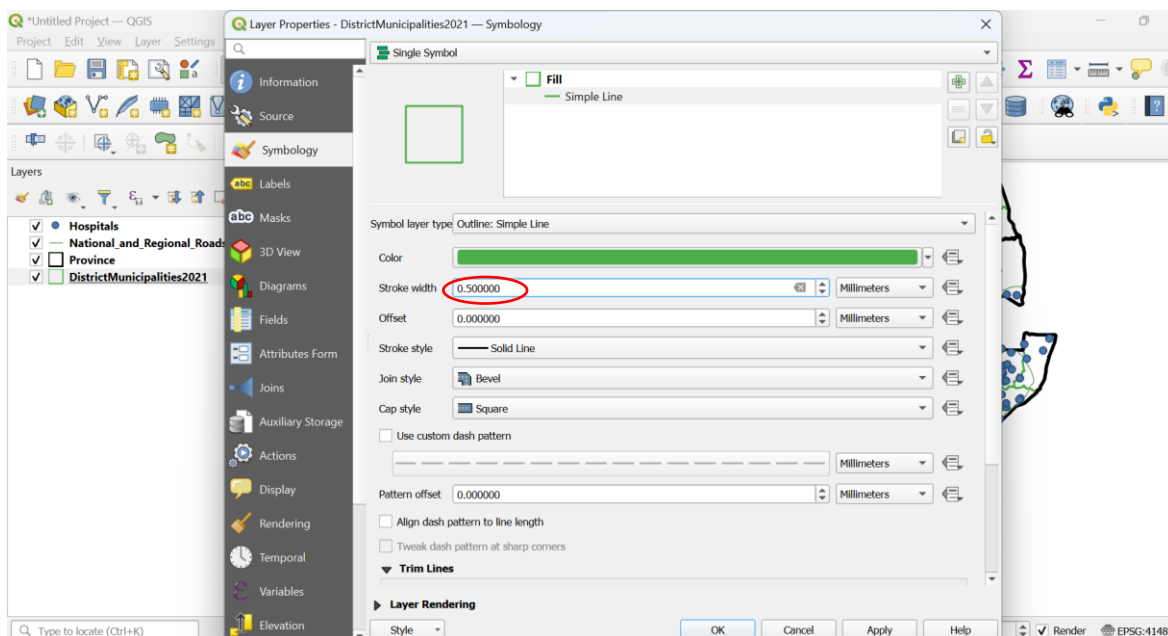
The following will show up.



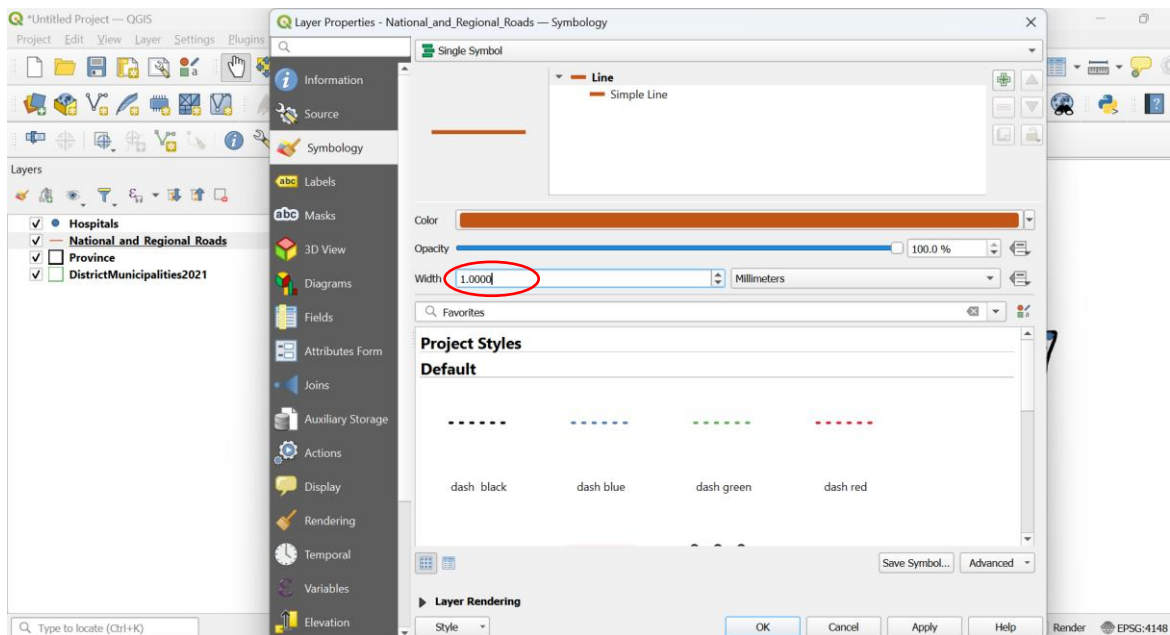
Change the symbology for Provinces to Outline black and District Municipalities Outline green.



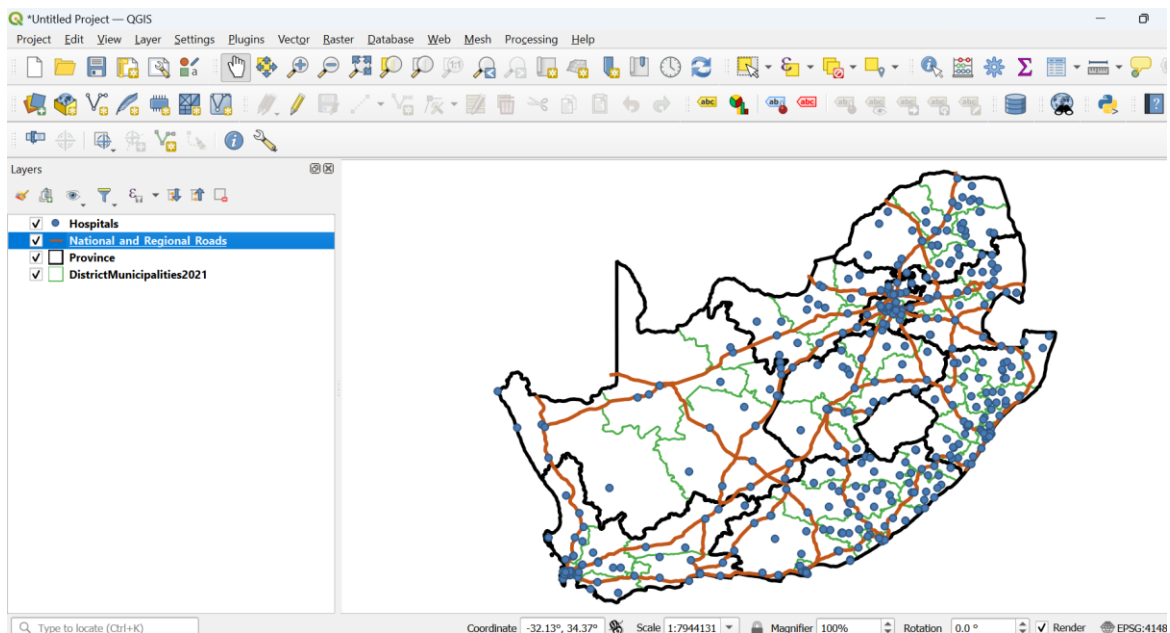
Change the DistrictMunicipalities2021 layer line to 0.5 by double-clicking on DistrictMunicipalities2021 layer and then click on Simple Line under Fill. Then change Stroke width to 0.5, then click Ok.



To ensure that Province boundaries are visible, drag Province layer under Layers List to be on top of DistrictMunicipalities2021 layer. Double click on National_and_Regional_Roads.shp, change Colour to brown and change line Width to 1.000 and click Ok.

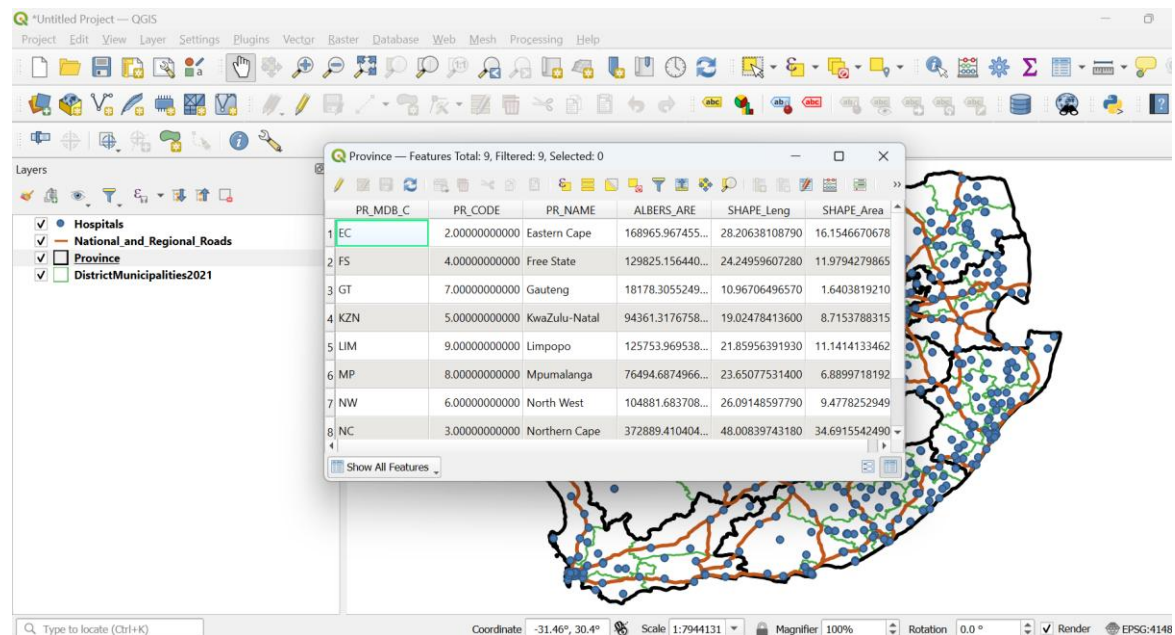


The following will show.



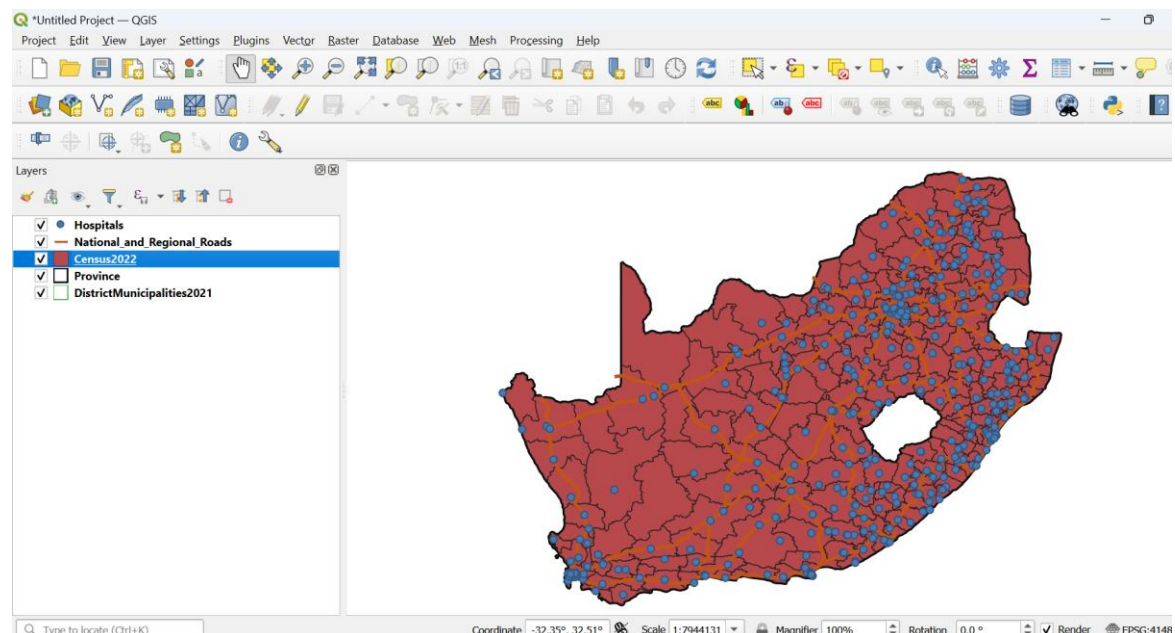
4. Exploring Attribute Table

Right-click on Province layer under Layers List and then select Open Attribute Table. The information related to each province is now showing such as Code, Name and Area. One can sort the list by clicking column heading of choice. Close the Attribute Table.

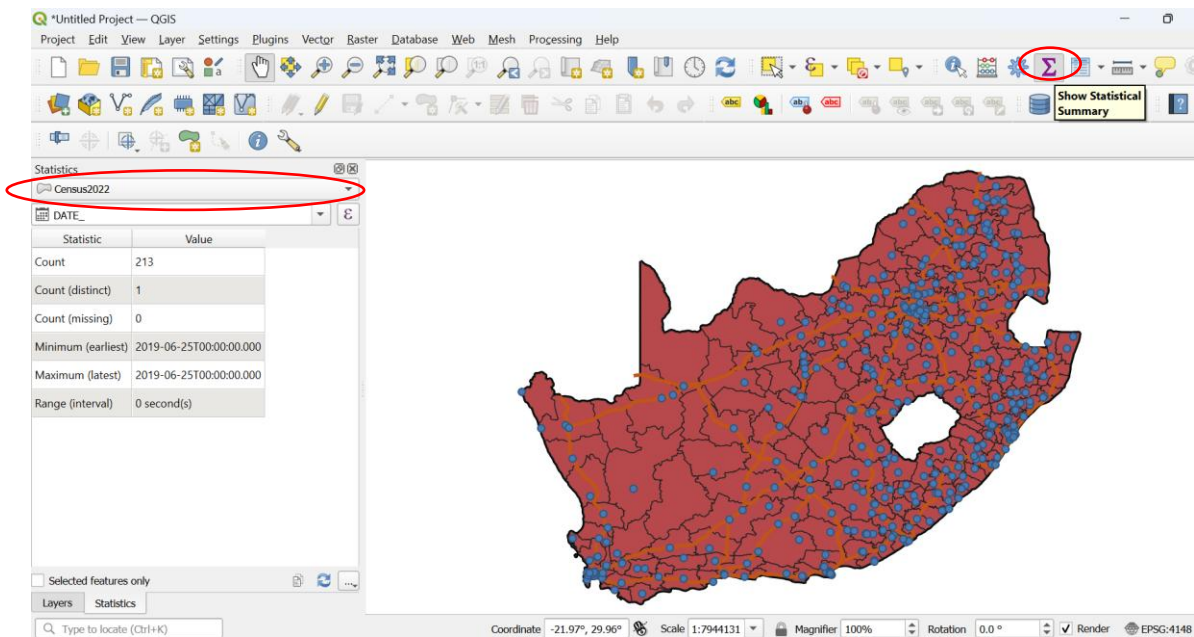


5. Basic Statistics Using Survey Data

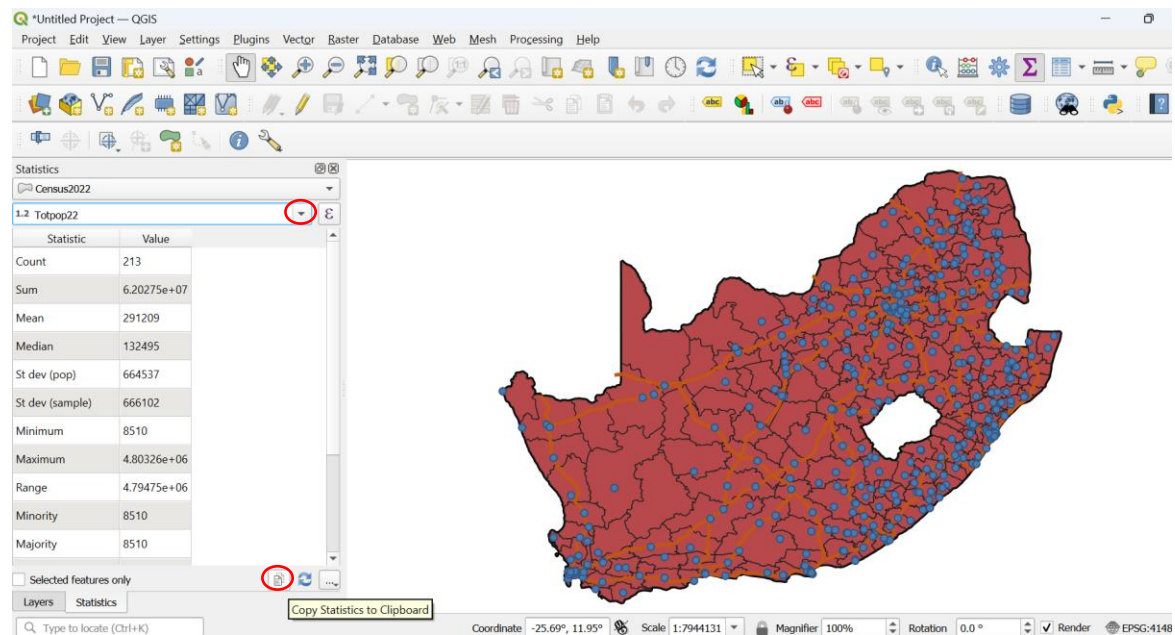
Add Census2022.shp layer from Census 2022 folder under Data.



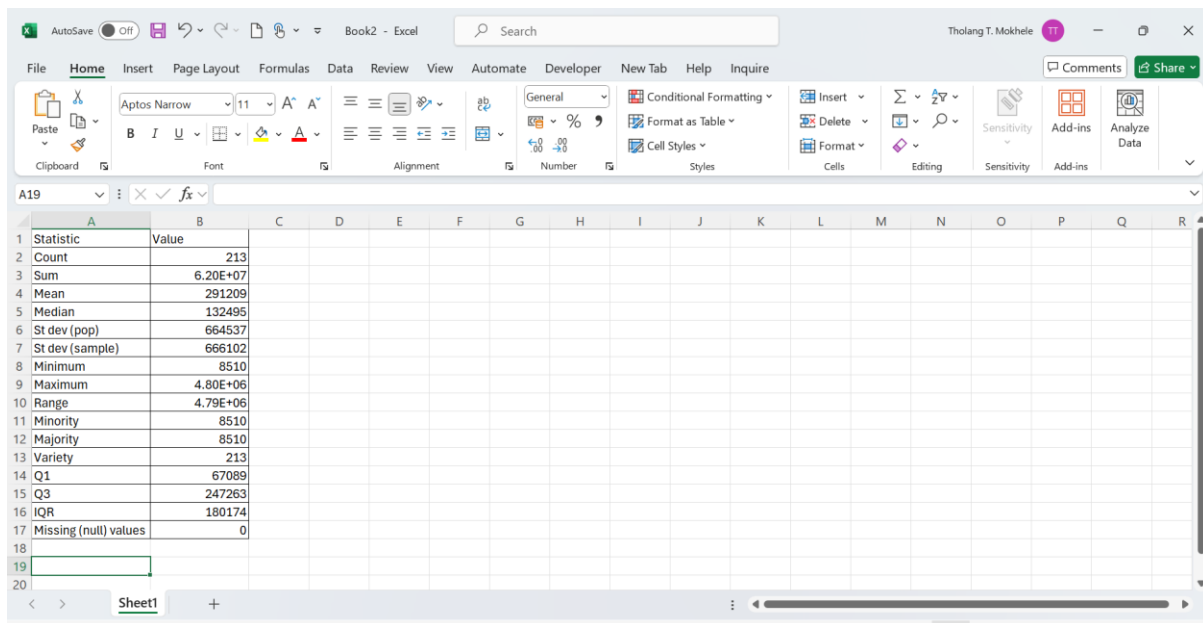
For basic statistics, select Sum icon the Tool bar. Then select Census2022.shp under Statistics pop up.



Then scroll and select for 1.2 Totpop2022 (Total Population) as shown below. To copy the statistics to word or excel document, click on the Paste icon near Refresh icon.



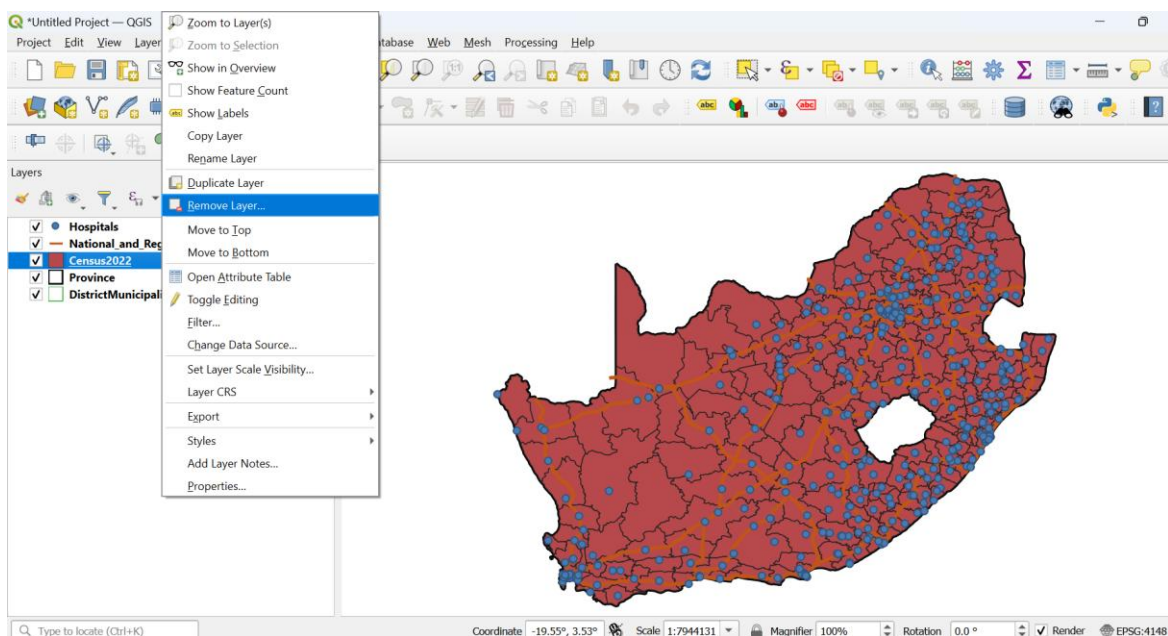
Open new word or excel document. And then click paste. The basic statistics results are now showing in excel sheet.



Statistic	Value
Count	213
Sum	6.20E+07
Mean	291209
Median	132495
St dev (pop)	664537
St dev (sample)	666102
Minimum	8510
Maximum	4.80E+06
Range	4.79E+06
Minority	8510
Majority	8510
Variety	213
Q1	67089
Q3	247263
IQR	180174
Missing (null) values	0

6. Removing A Layer From Layers List

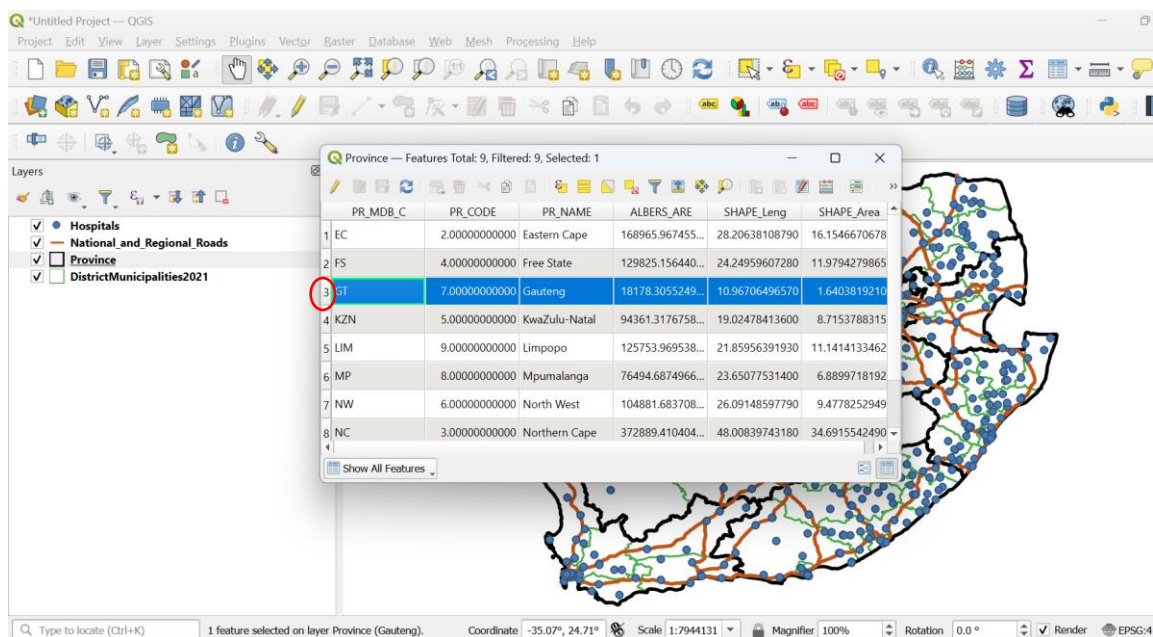
Right-click on Census2022.shp under Layers List and select Remove Layer. And then click Ok.



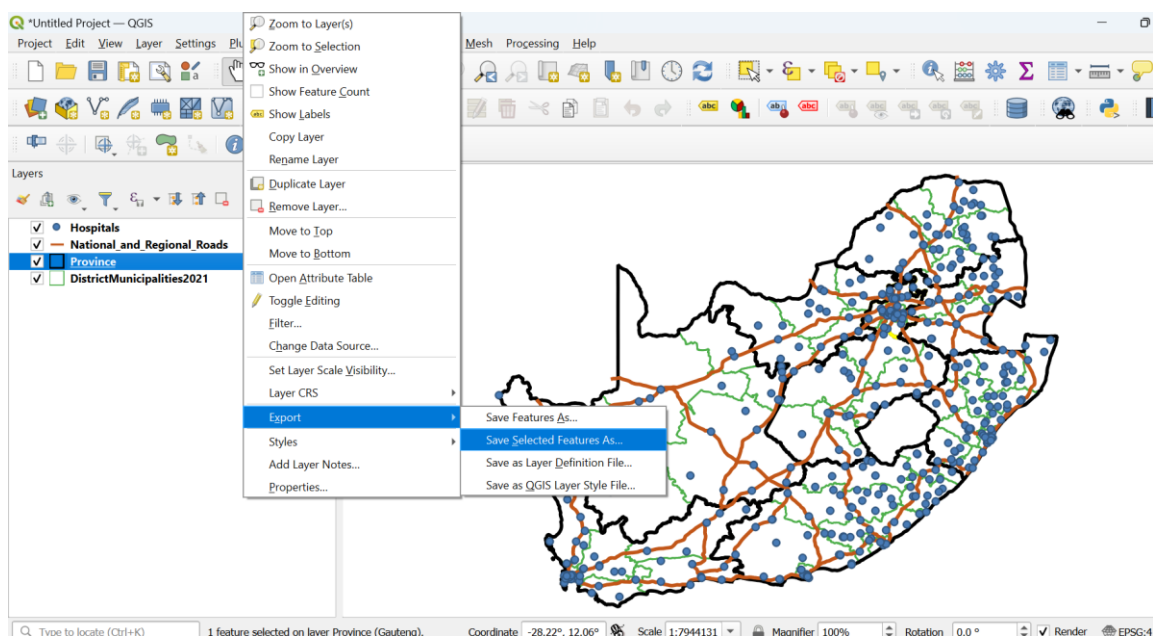
7. Selecting Features And Creating Layer From Selected Features

One can select features using different methods such as selection based on Attribute Table, Selection by Expression and Selection by Location.

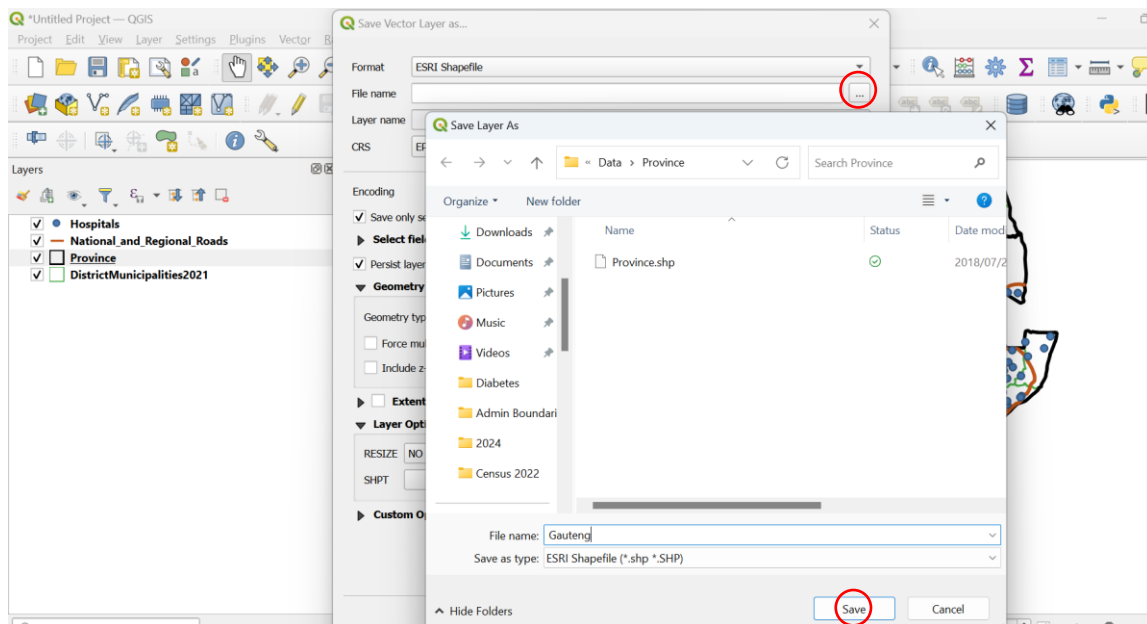
For selection based on Attribute Table, right-click on Province and select Open Attribute Table. Select Gauteng province by clicking at the beginning of the row (on the number) in which Gauteng is. Now Gauteng province is selected.



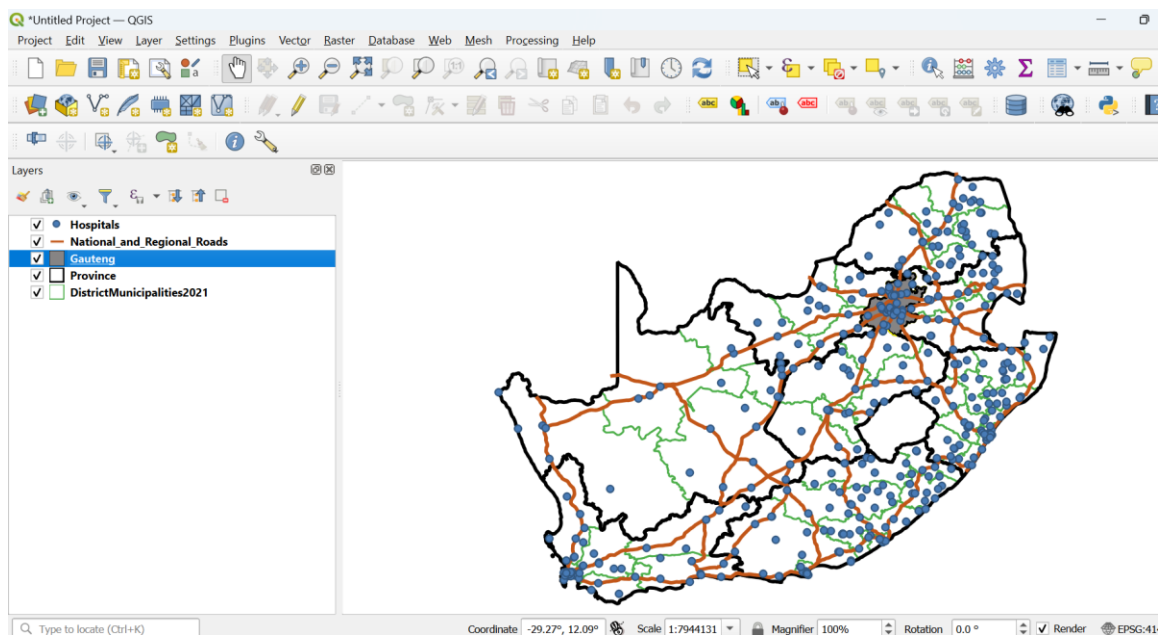
To create layer from selected, right-click on Province layer from Layers List and select Export and then click on Save Selected Features As.



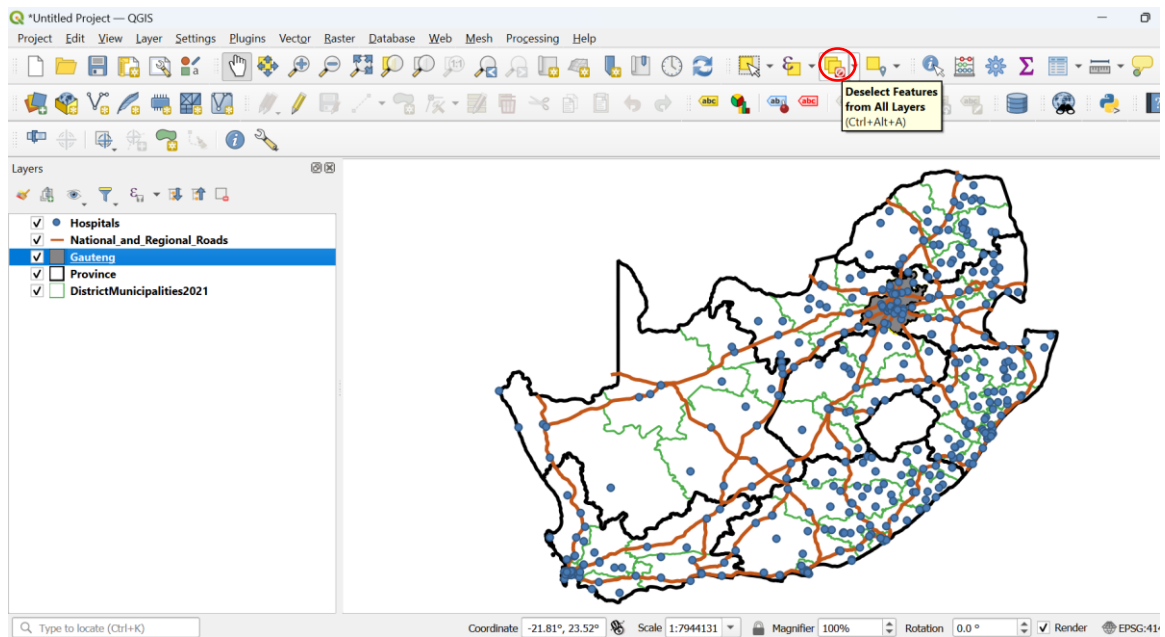
Type Gauteng for file name. Click on Browse icon  to save it under Data where all other datasets are located. Then click Save and Ok.



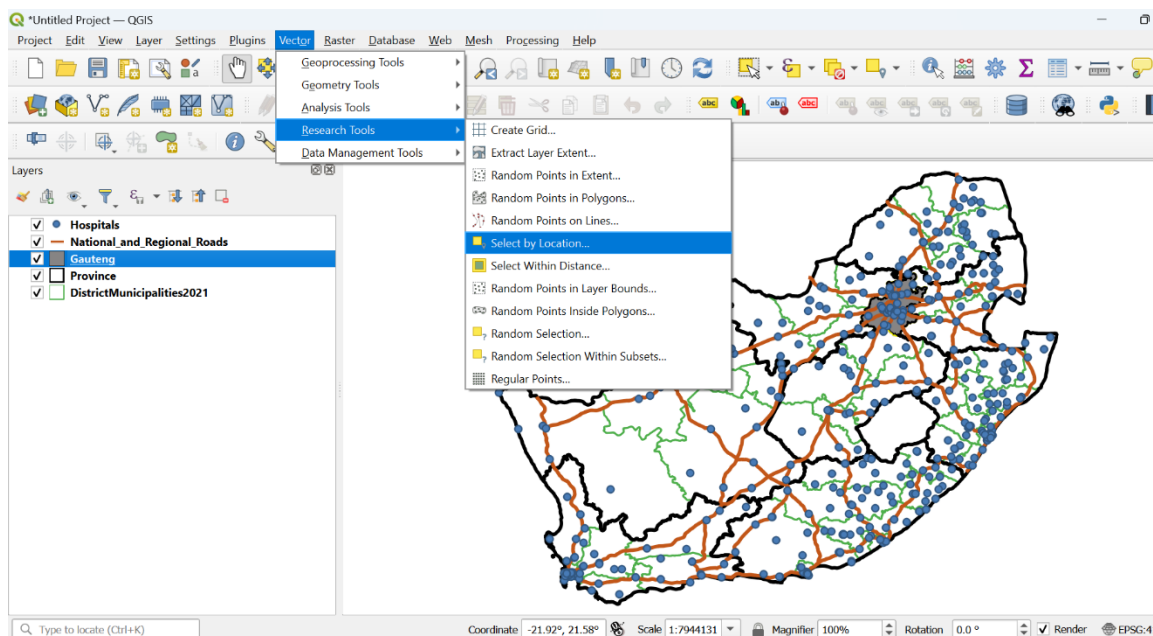
Gauteng layer is now showing on the map and under Layers List.



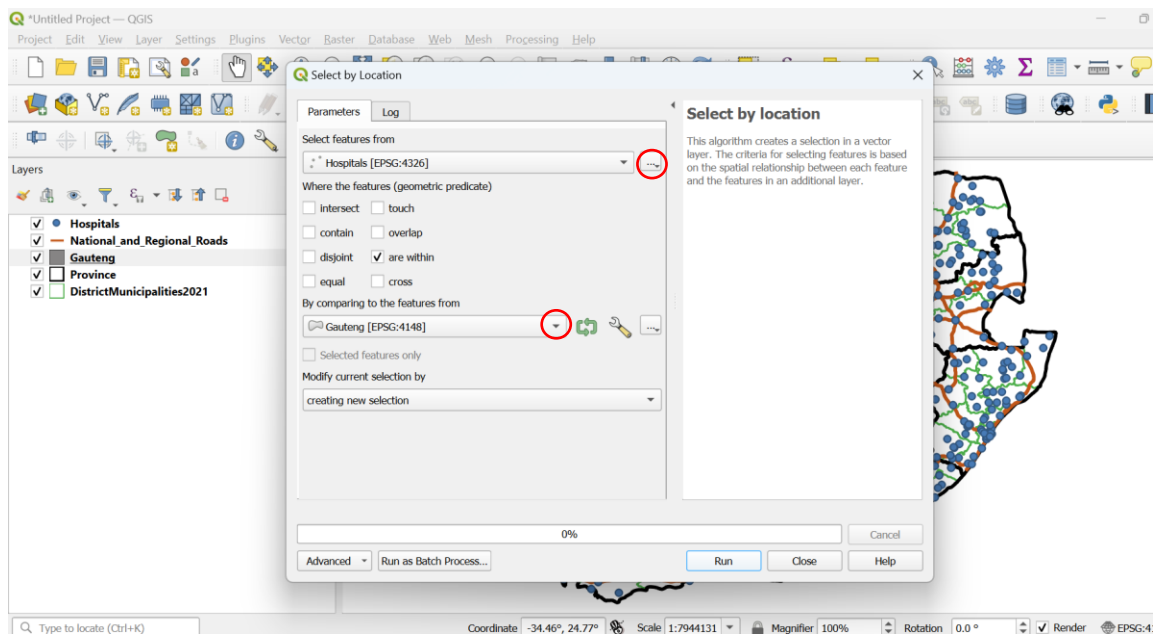
To deselect features, click on Deselect icon .



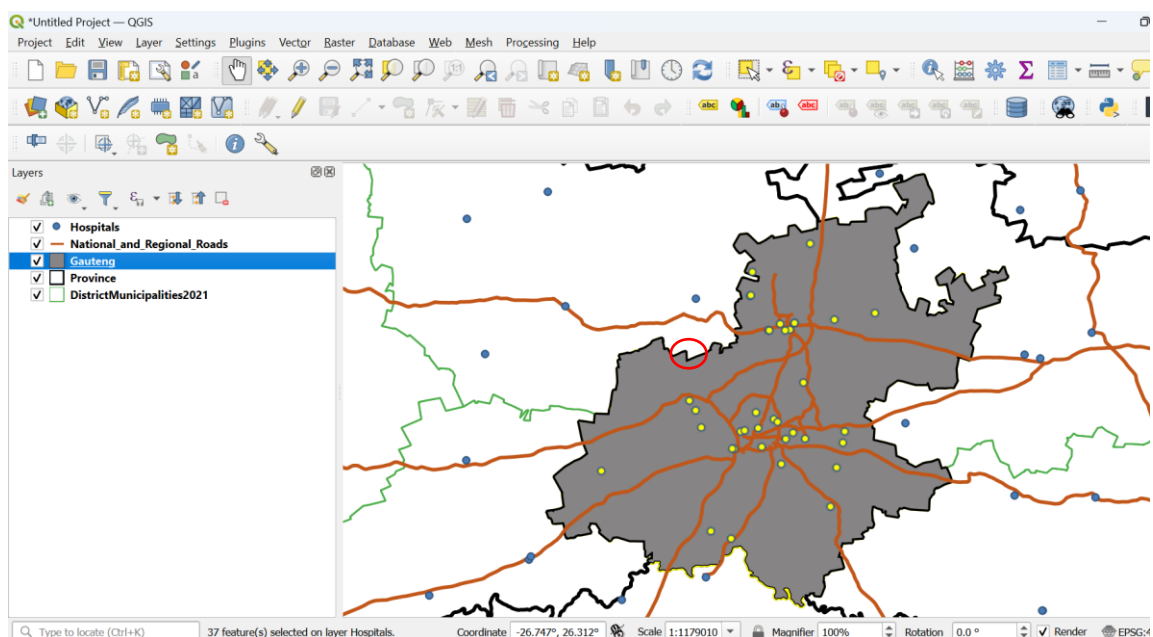
For Selection by Location, select Vector from the Menu Bar, then select Research Tools and click on Select by Location.



Under Select features from, choose Hospitals. Uncheck Intersect and then check Are within. Under By comparing to the features from, choose Gauteng. Then click Run.



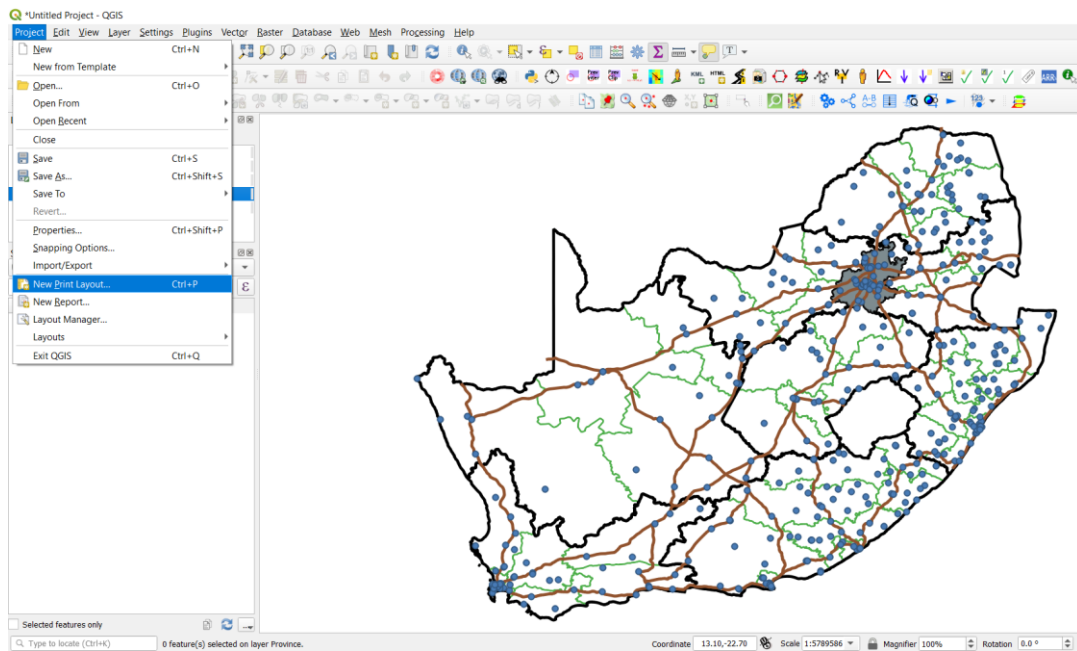
Right-click on Gauteng layer under Layers List and select Zoom to layer. All selected Hospitals are in Gauteng asre showing in yellow colour.



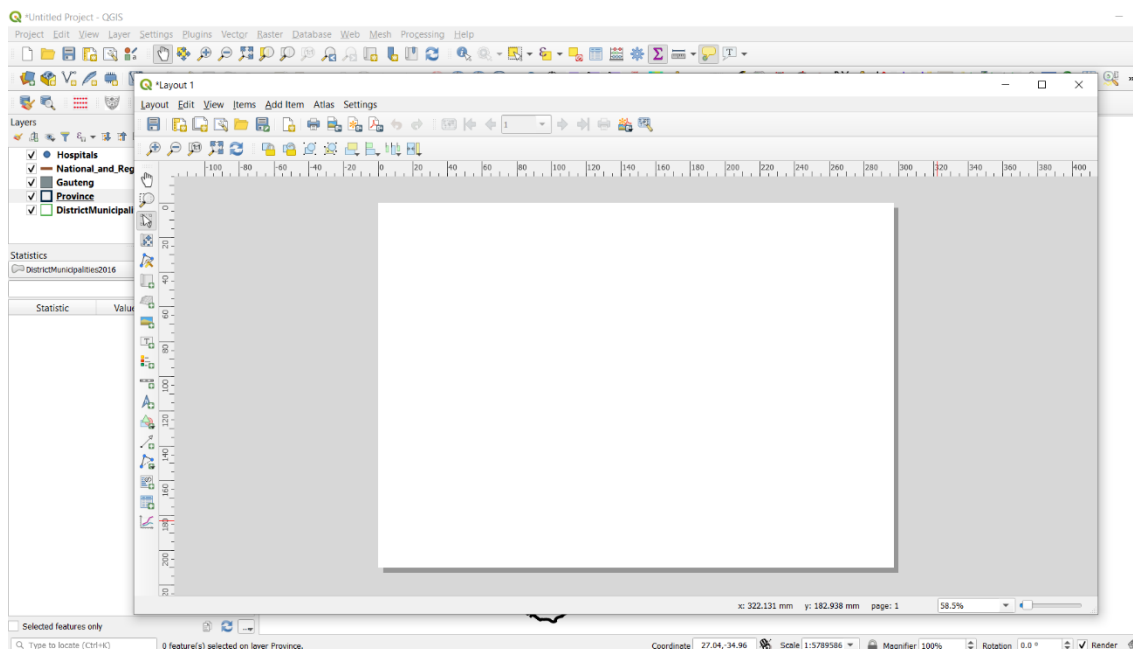
Follow the same steps for creating a layer and create a layer called Gauteng Hospitals. Save and Deselect features.

8. Creating A Thematic Map

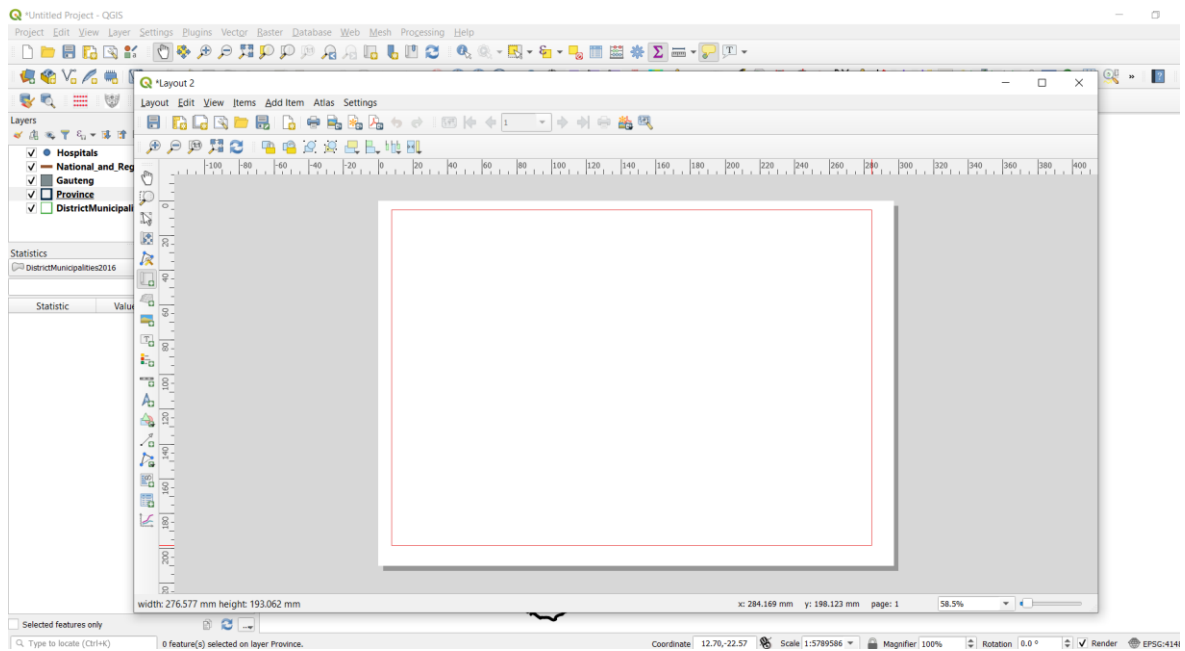
To go back to the map of the whole country, right-click on Province layer under Layers List and select Zoom to layer. Select Project from the Menu Bar and then click on New Print Layout. Then click Ok on the new window that will pop up.



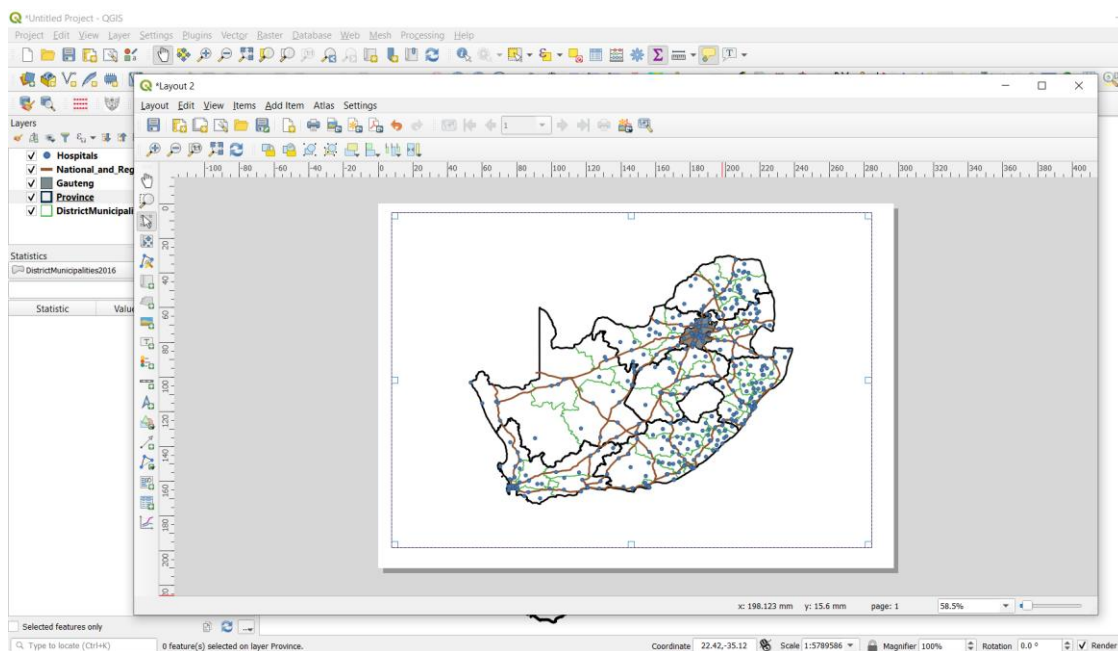
A blank Layout will pop up. Then click on Add Item and select Add Map.



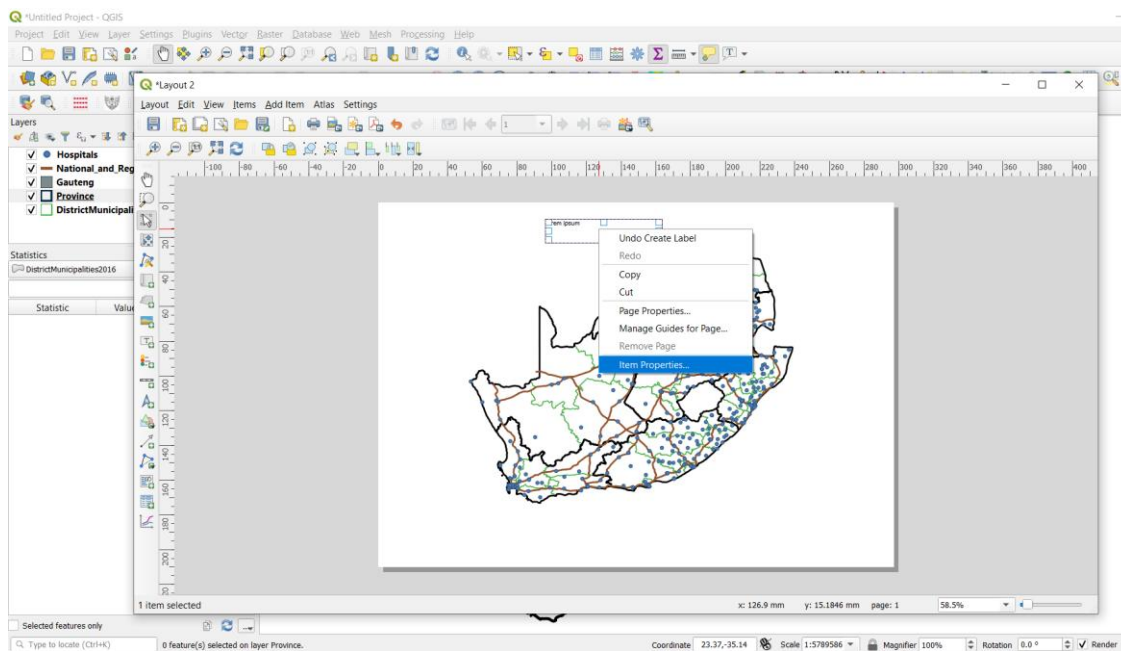
Drag the cursor from the top left corner on the white space to the bottom right corner to select where the map should be located.



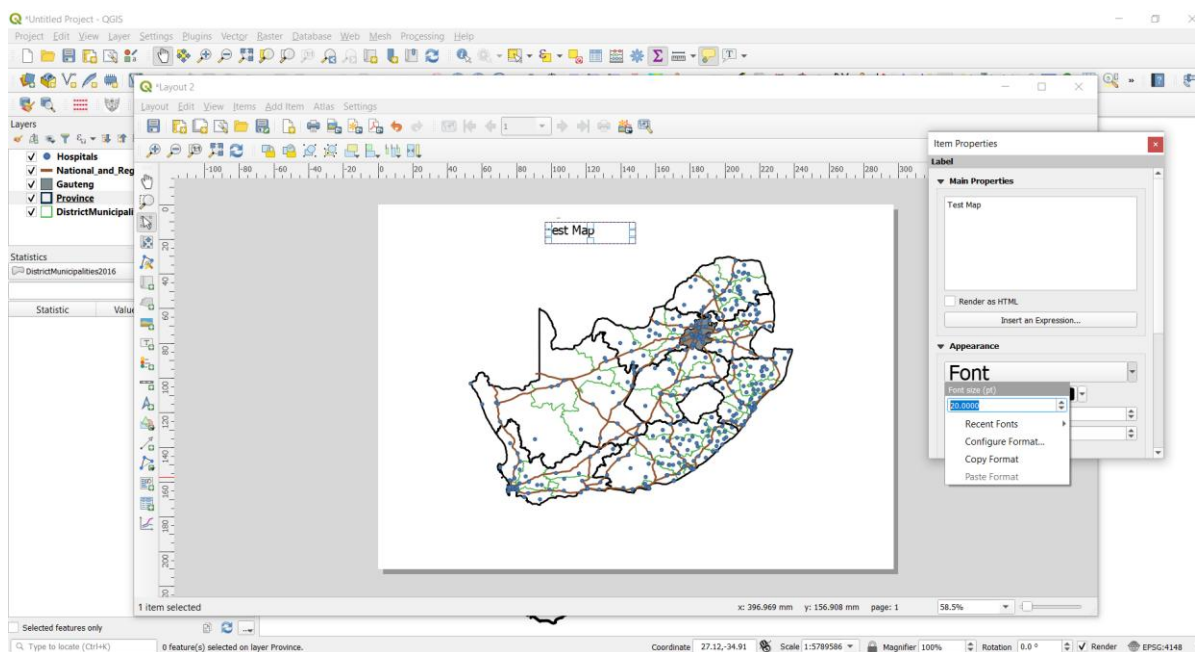
Then the Map will pop up.



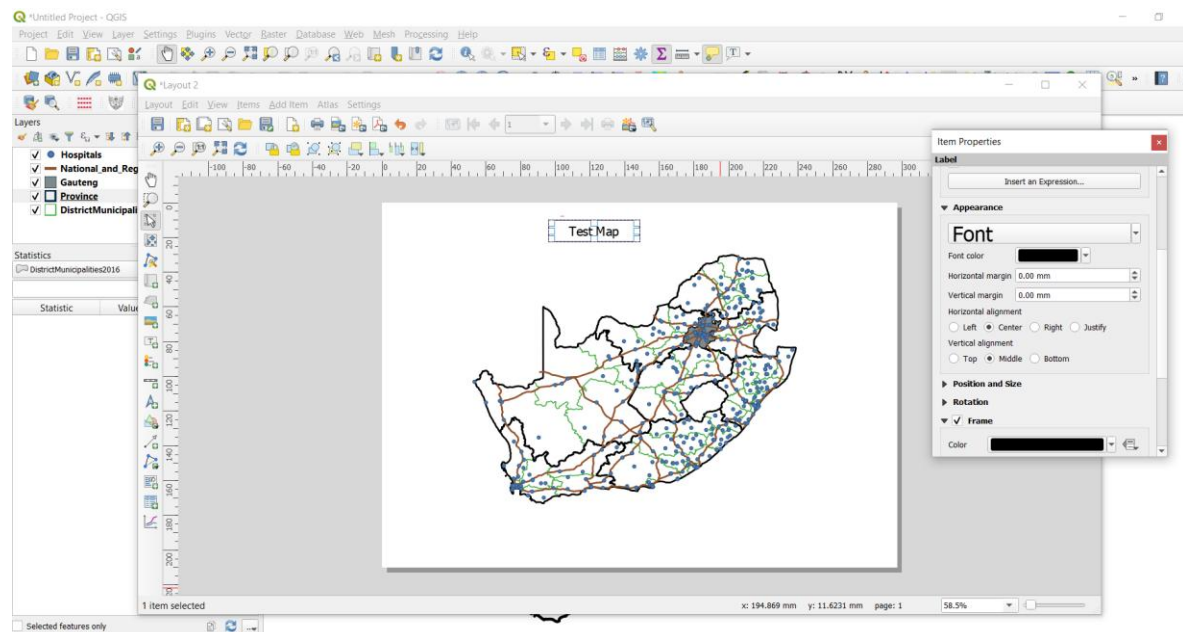
To add Title, select Add Item from the Menu Bar and select Label. Drag the cursor and draw a small box on top of the Map where the Title should be located. Then right-click on the box and select Properties.



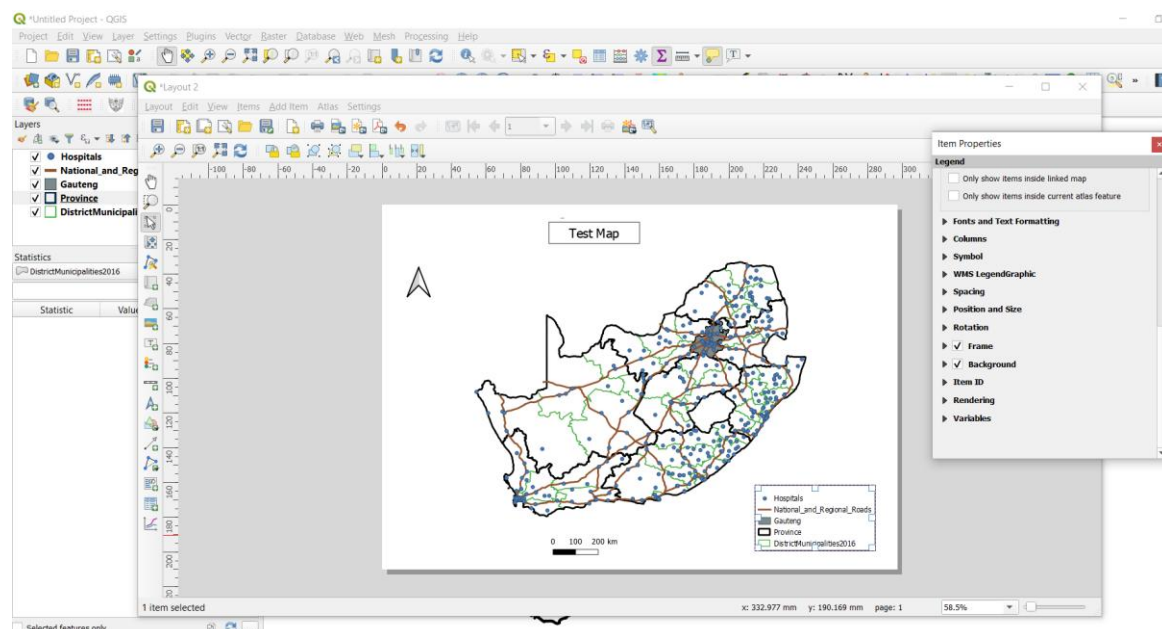
Replace Lorem ipsum with Test Map. Change Font size to 20.



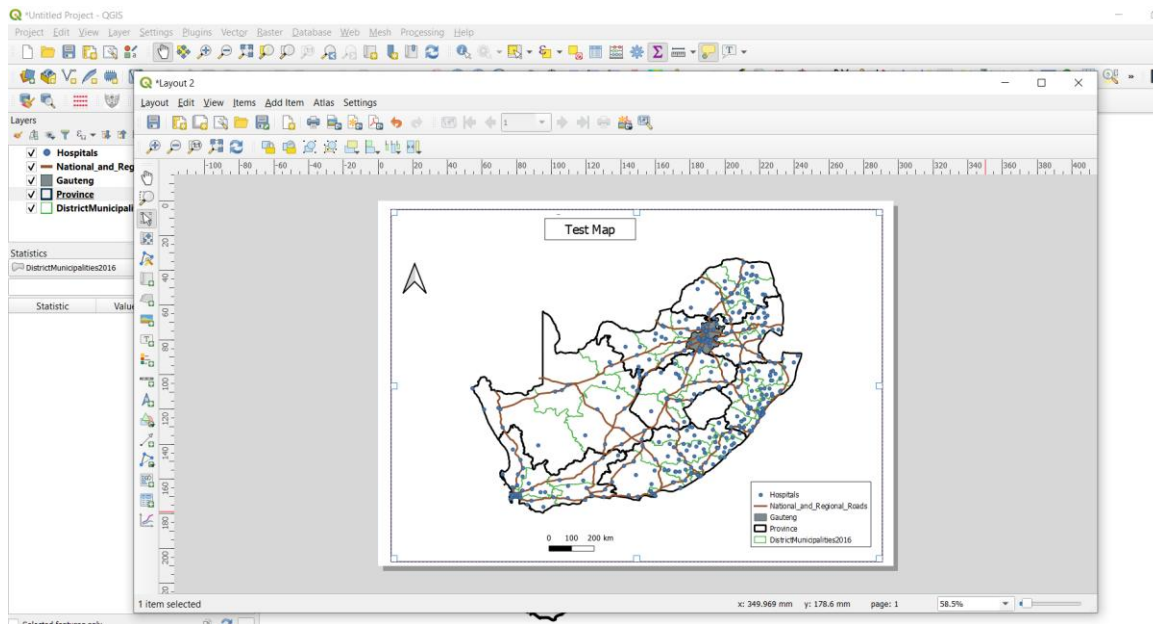
For alignment, chose Center for Horizontal and Middle for Vertical. Then check Frame and close Item Properties.



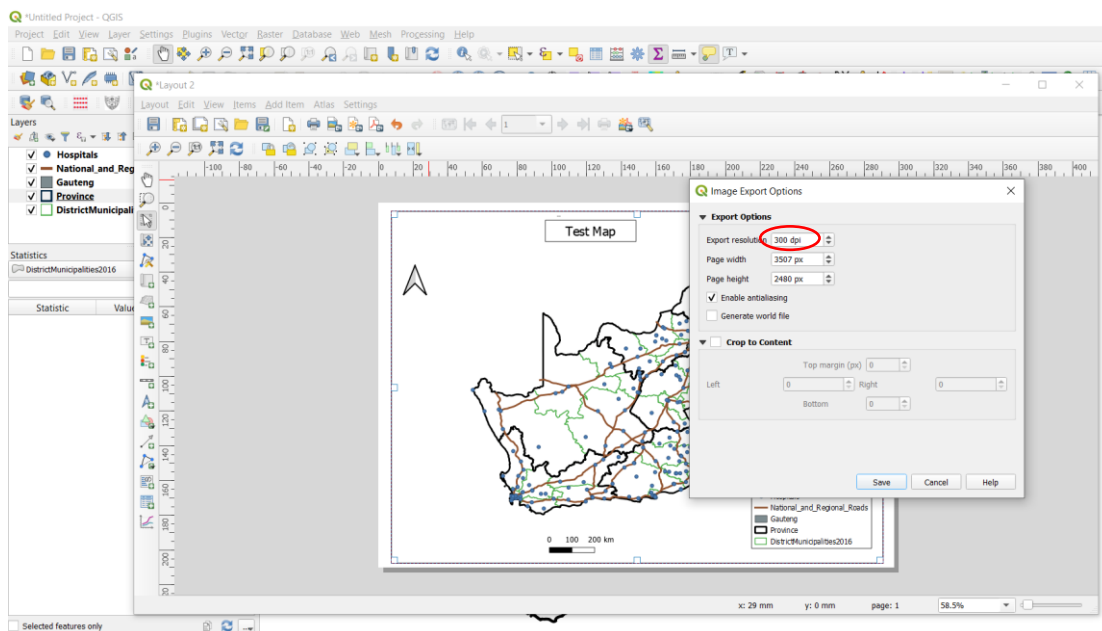
Add the North Arrow on the top left following same step as adding Title and add Scale at the bottom centre of the Map. Follow similar step to add Legend at the bottom left corner. Right-click inside Legend box and select Item Properties, then scroll down and check Frame box.



To have a Frame for the entire Map, right-click empty space on the Map. Then select Item Properties.



The Map can now be saved as a PDF for print and storage. Click on the PDF icon  on the Layout Menu Bar. Save the Map as Test Map under Data. The Map can also be exported as JPG or TIFF files. To do this, click on the Image icon  on the Layout Menu Bar and one can adjust dpi based on the report or book or thesis or journal article requirements.



Click Save and close the Layout window.

You can now go to where you saved both Maps and see how they look. These maps can be inserted into a report, thesis, presentation, manuscript and book chapter.

Thank You