# QGIS Practical 3: Advanced vector symbology – part 2, and working with tables

In this practical exercise, you will start working with a new type of data, which comes in table format. The table we will add has information about population values in each Admin 1. You will learn how to join a row of information in the table with a related shape in a vector dataset. And you will then learn to symbolise data using a method called "Graduated Symbology."

1.0 Getting Started

1. By starting a new project and adding the following layers:

   o The Admin 1 layer: grd_admn_ad1_py_s1_gadm_pp_parish.shp in GIS\2_Active_Data\201_admn

2.0 Adding the table data

2. In QGIS click on [icon] to **Open Data Source Manager,** then click [icon] **Add Delimited Text Layer**

   o For **File Name** browse to ..GIS\2_Active_Data\212_popu then select **grd_popu_pop_tab_s1_govn_2011.csv**

   o **Geometry Definition:** [you may need to scroll down the window to see this], make sure the setting is **No geometry (attribute only table)**
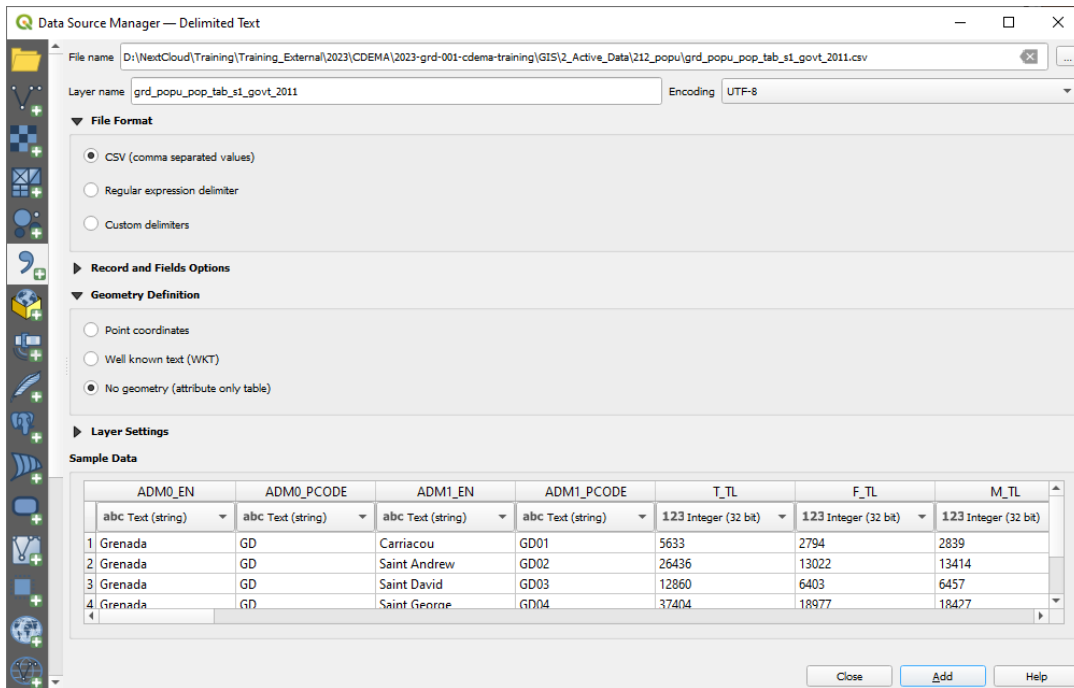
     o   Click **Add** to add the table to QGIS

3.   Close the **Data Source Manager**

3.0 Join the population data to the spatial layer

You will notice that the dataset has been added to the project (you can see it in the **Layers' Panel** on the bottom left area of the screen). However, no shape has been drawn on the map, as while each row refers to population values in an administrative area, there is no shape information on those administrative areas in this dataset.

To create this association, we will now join the population data from the table to the administrative boundaries that the data is associated with. In order to do this, there should be a column in the population dataset with information about which administrative area that row of data belongs to, and a column in the shape dataset with exactly that same information. Basically, both datasets should have a column with equal values, that will tell QGIS which rows in the table dataset should be joined with which item in the shape dataset.

1.   Right-click on the table name (grd_popu_pop_tab_s1_govn_2011) and **Open Attribute Table** to view the population data

2.   Right-click on the Admin 1 layer (grd_admn_ad1_py_s1_gadm_pp_parish.shp) and **Open Attribute Table** to search for a column that is common to the table dataset that we could use for joining them

CDEMA
CARIBBEAN
DISASTER EMERGENCY
MANAGEMENT AGENCY
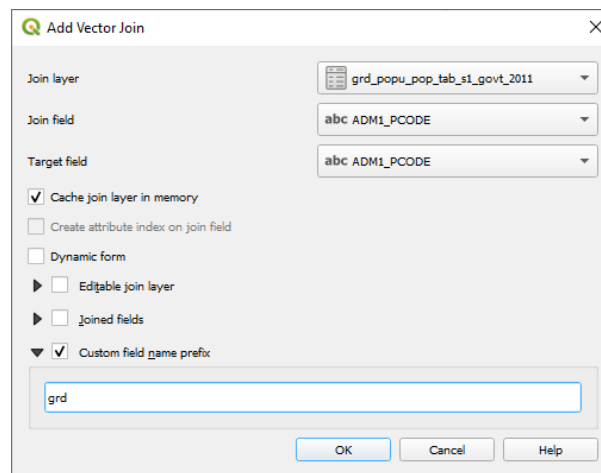Resilient States - Safer Lives

MAP ACTION

You should see fields containing the names and P-codes for administrative areas, as well as population data.

We will now join this information to the relevant admin boundaries so that we can see the spatial pattern within the population data.

3. Right-click on the **admin 1** boundaries in the **Layers** list and select **Properties**, then select **Joins** from the list on the left

4. Click on ⊕ **Add New Join** button

   o The **Join layer** should be

   o Set the **Join field** to **ADM1_PCODE**

   o Set the **Target field** to **ADM1_PCODE**

   o Set a **Custom field name prefix** to reduce the size of the field name – e.g. grd

   o Click **OK** to complete the join, then OK to close the **Layer Properties** window.

5. Open the attribute table for **admin 1** boundaries - you should see the newly joined fields

The new fields have the name of the join table included in the heading; you may need to expand the width of the column to see the full names of the fields. In this case, we have many new fields added to the attribute table, containing population data with gender and age. For this exercise, we will focus on **total population**.

Please note that this has not changed the administrative areas dataset. It is only a virtual join, for the duration of your work. When you close up this page, the join will disappear! You can, if you wish, save this dataset as a new layer but right clicking, and choosing **Export**.

4.0 Graduated symbology: creating a choropleth map

Now that the data has been joined to the province boundaries we can change the symbology to show the number of households for each of the municipalities. Some areas will have a smaller number, and some areas will be more populated. Graduated symbology helps us with visualising relationships between shapes with different numerical values.

1. Right-click on the **admin 1** boundaries and click **Properties**, then select **Symbology** from the list on the left

2. In the top of the window change the setting **Single symbol** to **Graduated.**

3. In the value field select the field **grdT_TL,** which is the total population

   o If you do not see any options when you click on the dropdown window to select the fields, it is possible you imported the population dataset with fields coded as String, so text, rather than numbers. You can check how each field is coded by going to the Manage Fields section of the properties menu,

   which has this symbol

   o If indeed they are strings - do not worry! There is a handy little tool that you can run that will change your joined dataset's field formats. In the upper menu, press on the cog icon to open the **Processing Toolbox** and search for **Refactor fields.** Select the Admin 1 layer **as Input**, and under **Type**, select **Integer** for each numeric field (most of the new fields that were joined). This will create a new dataset, which you may want to save in ..GIS\2_Active_Data\212_popu, with a name following some naming conventions, which explain what the dataset is. Now, with your new dataset, you can go back to **Symbology**, and choose **Graduated**, and should now be able to see all the numeric field options. Choose the population totals.

4. Set mode to **Natural Breaks,** set **Classes** to 5, and click on **Classify.**
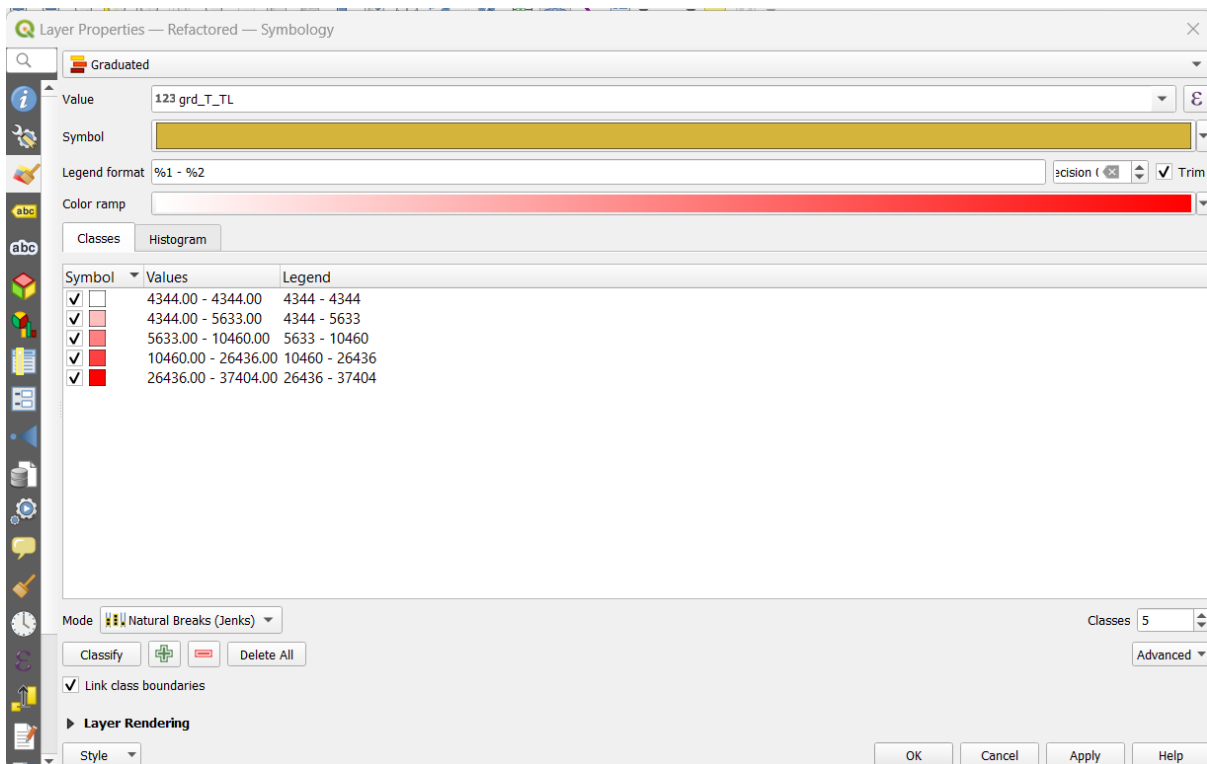
5. Click **OK** then have a look at the result. Observe where the highest and lowest values are shown

6. Close the **Layer Properties** window

5.0 Saving a project

Saving a project allows you to return to it later and continue working on it.

1. From the project menu select **Save**
2. If it is the first time saving the project, use the menu prompted by QGIS to save the project within the folder ..GIS\3_Mapping\33_Map_Projects and change its name to call it **Population_Baseline_Map.**

6.0 Summary

In this session, you explored how the choice of symbology can help enhance data interpretation, but this time showing differences in numerical values, rather than categories in the data. You also learned about a new data type - tables!