Exercise 5: Displaying Data

In this exercise you will learn how to categorize data to make a thematic or chloropleth map. A thematic map is a useful way to show data for multiple areas at one time. This data can be related i.e. nominal or unrelated i.e. ordinal.

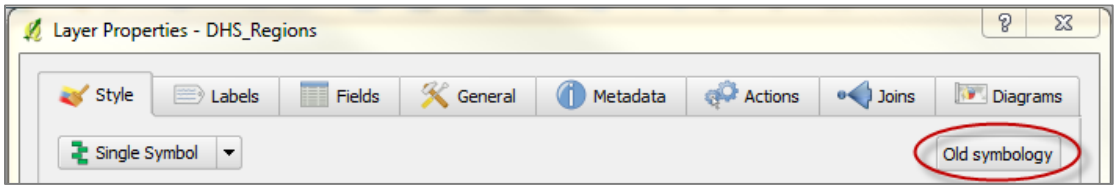
Section 1: Classify with Graduated Renderer

The *Indicator_Join* layer appears in a single color by default. You will categorize the variables with one color using a method called graduated renderer.

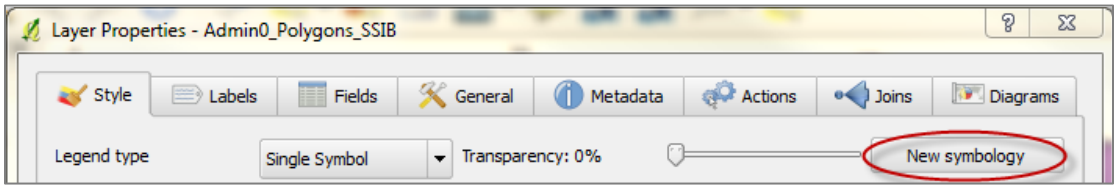
1. Open QGIS Desktop
2. Click *File>Open Project*
3. Browse to
   \\Vietnam_Training\04_Exercises\Project_Files\VNM_Displaying_Data.qgs
4. Click *Open*
5. Add the *Indicator_Join* layer you created in Exercise 4
   \\Vietnam_Training\06_Participant_Work\Indicator_Join.shp
6. In the *Layers Panel,* right click the *Indicators_Join* layer to open its *Layer Properties* dialog box
7. Click the *Style* 

tab

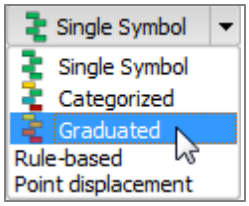
   Note: In previous versions of QGIS it was called Symbology
8. Make sure the button near the top right of your screen says *Old Symbology*



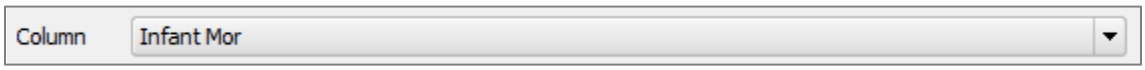
   Note: If your screen looks like the image below, then click on the *New Symbology* button. Clicking on *New Symbology* will change it to the newer version of QGIS symbology. You will receive a prompt asking if you wish to use the new symbology implementation for this layer. Click *Yes*.



9. Select *Graduated* from the drop down menu directly below the *Style* tab

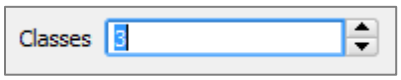


10. Select *Infant Mor* for the *Column*



11. Select the *Oranges* color ramp

12. Select *3 Classes*



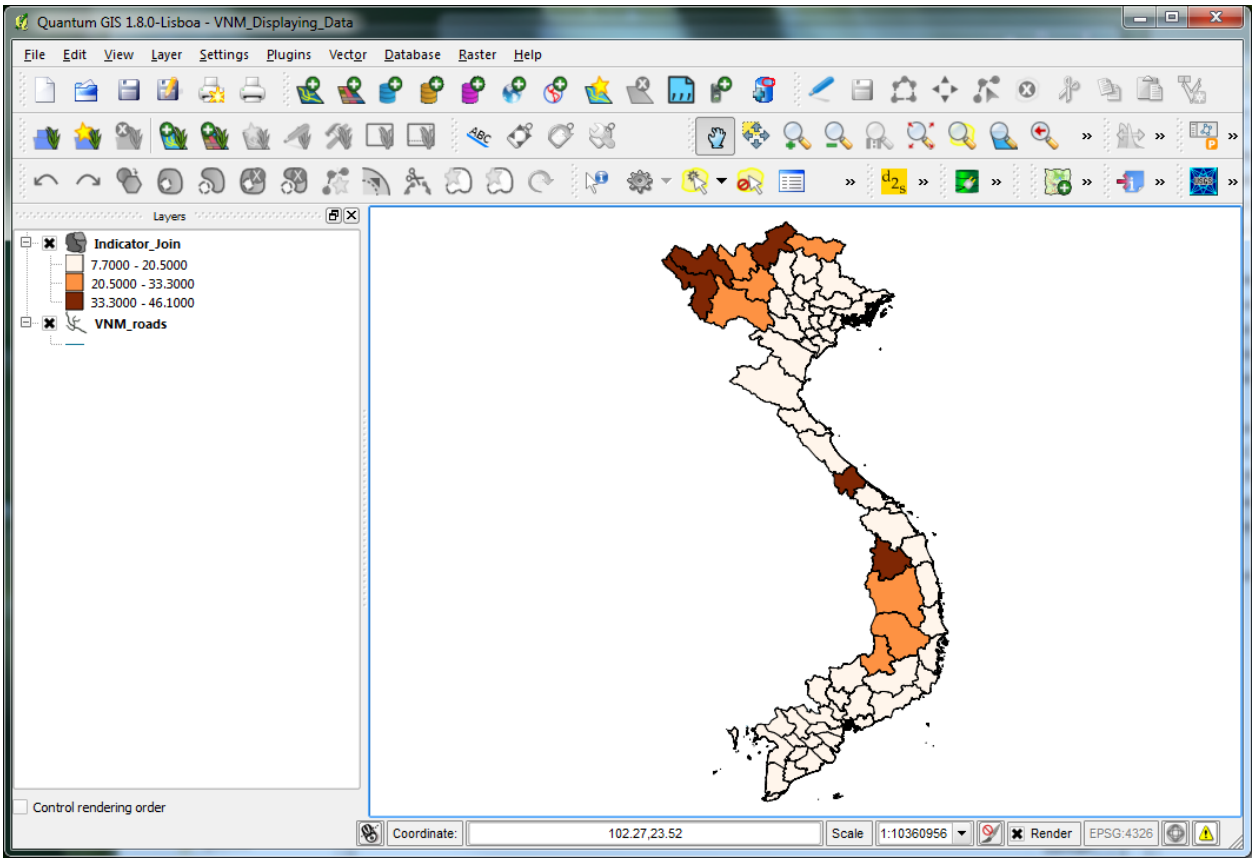
Note: By default the mode is set to *Equal Interval*. This means that the layer's attributes' are divided into groups that contain an equally spaced range of values. Other data classification options are:

- Quantile: distributes a set of values into groups that contain an equal number of values.
- Natural break: manual data classification that seeks to partition data into classes based on natural groups in the data distribution. Natural breaks occur in the histogram at the low points of valleys.
- Standard Deviation: finds the mean value (average) and then places class breaks above and below the mean at intervals of .25, .5 or 1 standard deviation until all the data values are contained within the classes. Values that are beyond three standard deviations from the mean are aggregated into two classes, greater than three standard deviations above the mean and less than three standard deviations below the mean.
- Pretty breaks: breaks the values into classes that are easily understood by non-staticians

13. Click *Classify*
14. Click *Apply*
15. Move the *Layer Properties* dialog box over to see the changes on the map

The country is now various shades of orange calculated by grouping the Infant Mor (Infant Mortality Rate_2010) variable into three classes. Each class is now listed in the *Layer Panel* with the color and label.

If you need a reminder of the full field names open \\Vietnam_Training\05_Data\01_Excel\Province_Statistics.xls



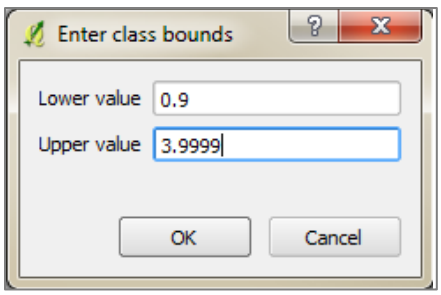
Now you will change the classification scheme for the data to Quantile

16. In the *Layer Properties Symbology* panel, change the *Mode* to *Quantile*
17. Change the number in the *Classes* box to *4*, this will change the number of categories from 3 to 4
18. Click *Classify*
19. Click *Apply* and move the *Layer Properties* dialog box to see the changes on the map
20. The range and label of the classification may need to be adjusted to make it user-friendly. Double click on the *Range* values you want to adjust

Symbol	Range	Label
	7.7000 - 12.7000	7.7000 - 12.7000
	12.7000 - 15.2000	12.7000 - 15.2000
	15.2000 - 19.2500	15.2000 - 19.2500
	19.2500 - 46.1000	19.2500 - 46.1000

21. Then set the lower and upper values of the range

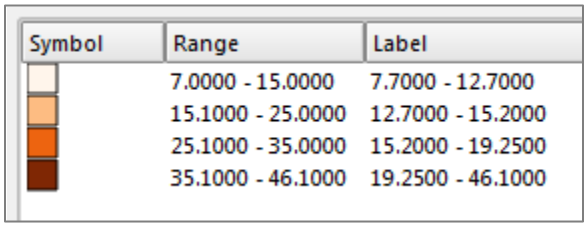
    Note: Make sure you do not have overlapping ranges or gaps in the range



For Example:

Class	Correct	Incorrect	Issue
1	0 – 10	0 - 10	
2	10.1 – 15	9 -15	Overlap
3	15.1 – 20	15.1 - 20	
4	20.1 – 25	21- 25	Gap

22. Double click on the label value you want to adjust and change it to match the range



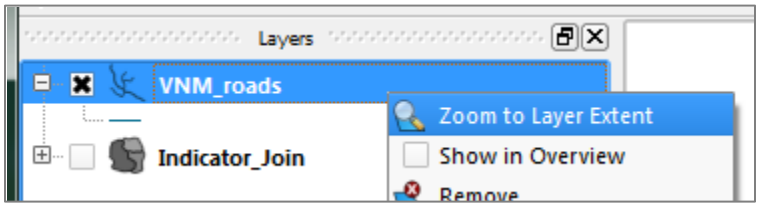
Note: If you make a mistake and want to return to the original classification then click 

23. Click *Apply*
24. Move the *Layer Properties* dialog box over to see the changes on the map and the legend
25. Click *OK*

Section 2: Classify with Categorized Renderer

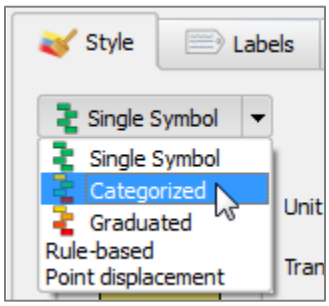
You will now categorize variables with multiple colors using a method called categorized renderer.

1. Check the boxes next to the *VNM_roads* layer to turn it on
2. Check the box next to *Indicators_Join* to turn it off
3. Right click on *VNM_roads* and click *Zoom to Layer Extent*



4. Open the *Layer Properties Style* panel for *VNM_roads*

5. Change the drop down menu directly below the *Style* tab to *Categorized*



6. Select *F_CODE_DES* for *Column*
7. Select *New Color Ramp…* from the *Color Ramp* drop down menu
8. Select *ColorBrewer* in the *Color Ramp Type* window
9. Click *OK*
10. In the *ColorBrewer Ramp* window, select *Spectral* for the Scheme name
11. Select *5* for colors
12. Click *OK*
13. Enter *Spectral Ramp* for the color ramp name
14. Click *OK*
15. Click *Classify*
16. Click *Apply* and move the *Layer Properties* dialog box to see the changes on the map

What do you see? Which roads are similarly colored? How might this method be useful and what attribute data is necessary?

Optional Steps:

Try to perform the following steps while exploring symbologies.

1. Select a different attribute and classify using *Graduated Symbol*
    a. Create your own custom category breaks
    b. Are all provinces displayed? Why did you choose those break values?
2. Classify another indicator code of your choice
    a. Graduated Symbol, Equal Interval, and *5* Classes
    b. Change the number of classes to *3*
    c. What would be a better way to display this data?
3. Classify any variable using New Symbology, Graduated Renderer, *20* classes
    a. What happened, why do you think this is?

End Exercise.

The information provided in this exercise is not official American Red Cross information and does not necessarily represent the views of the American Red Cross. The exercise was adapted from materials produced by MEASURE DHS and MEASURE Evaluation, which are funded by the U.S. Agency for International Development (USAID). The information from those materials is not official U.S. government information and does not necessarily represent the views of USAID or the U.S. government.