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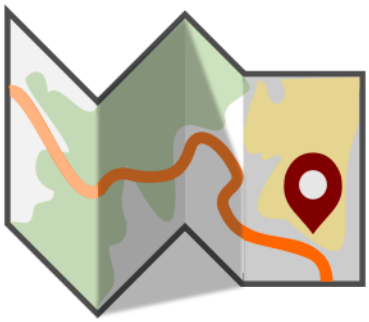
QGIS Tutorials and Tips



Author

<?py for author in authors: ?> .. cssclass:: author

#{author}

http://www.spatialthoughts.com

<?py #end ?>

Basic Vector Styling

To create a map, one has to style the GIS data and present it in a form that is visually informative. There are a large number of options available in QGIS to apply different types of symbology to the underlying data. In this tutorial, we will explore some basics of styling.

Overview of the task

We will style a vector layer to show life expectancy in different countries of the world.

Other skills you will learn

- View the attribute table of a vector layer.

Get the data

The data we will use is from Center for Sustainability and the Global Environment (SAGE) at the University of Wisconsin-Madison.

You can download the Life Expectancy GIS Grid data from the human impact dataset.

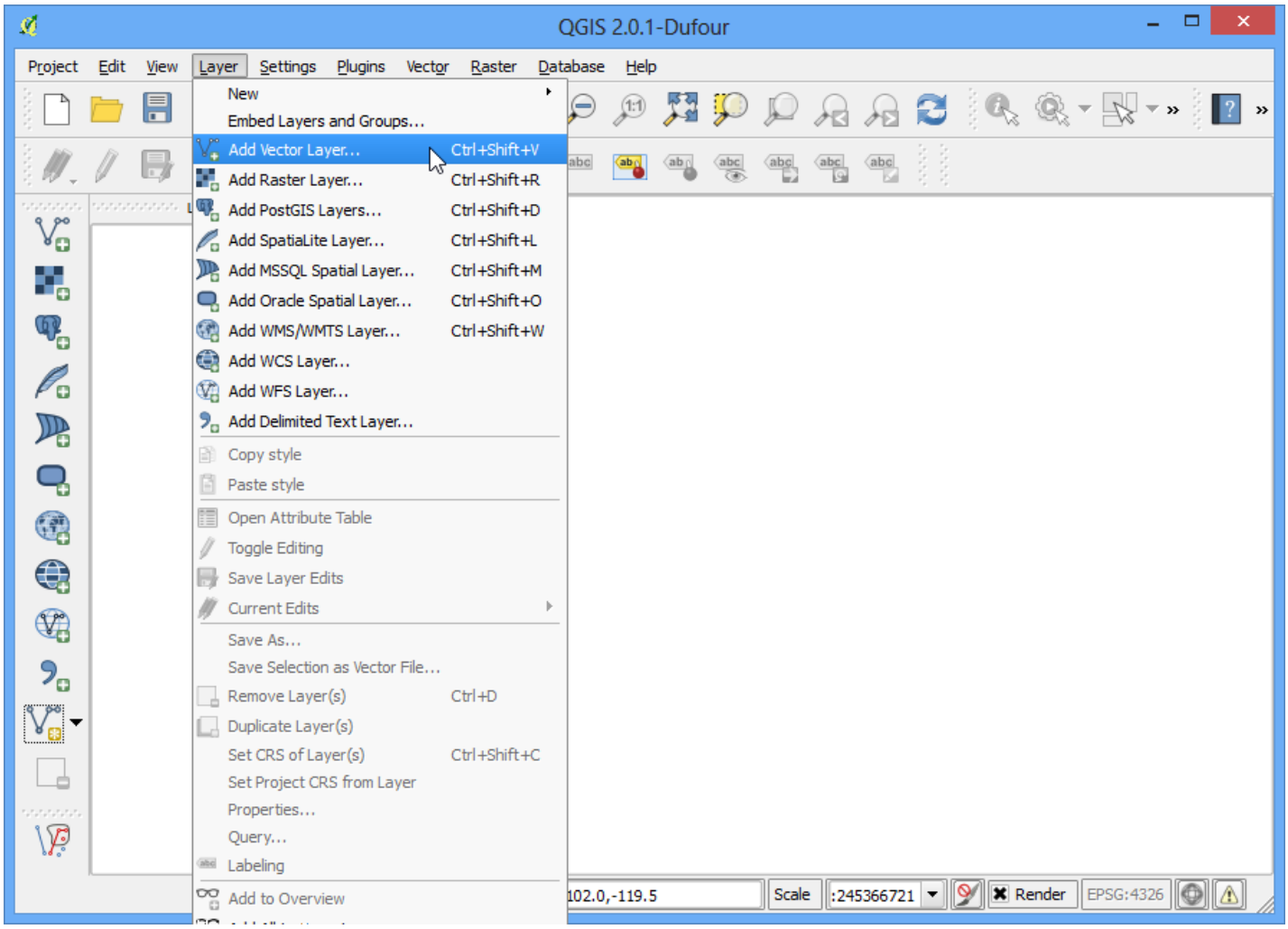
For convenience, you may directly download a copy of the dataset from the link below:

lifeexpectancy.zip

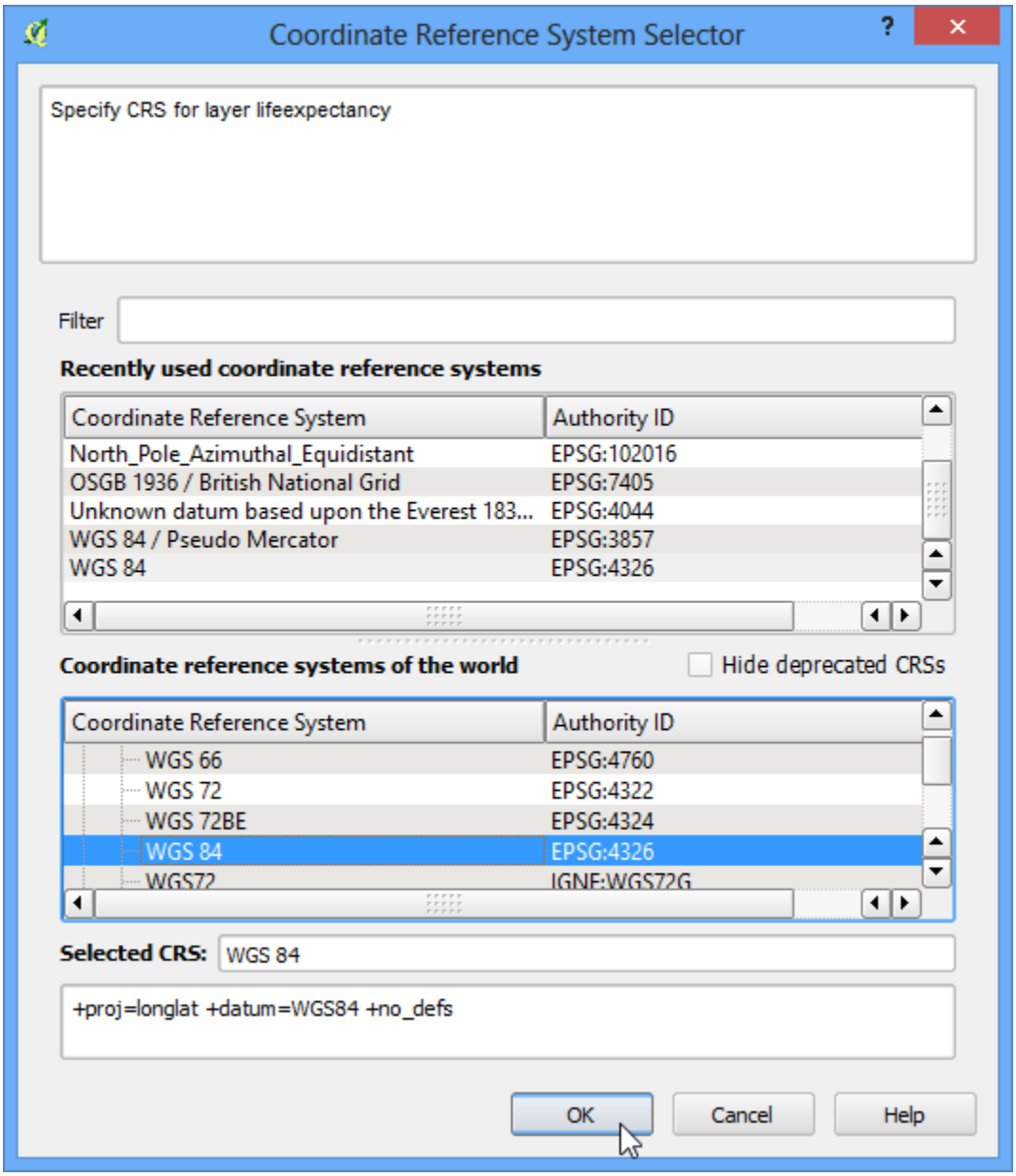
Data Source [SAGE]

Procedure

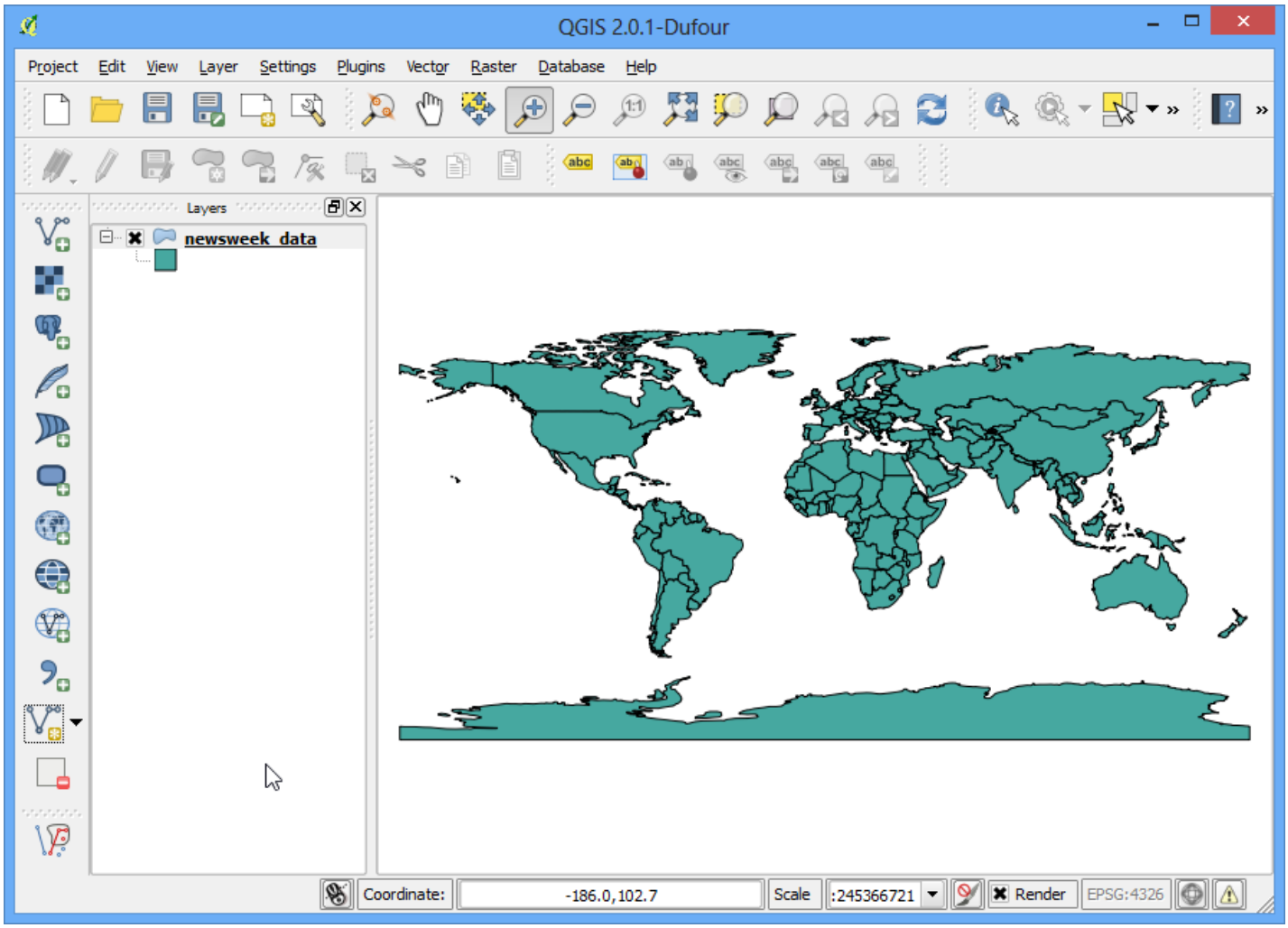
1. Open QGIS and go to Layer ▸ Add Vector Layer...



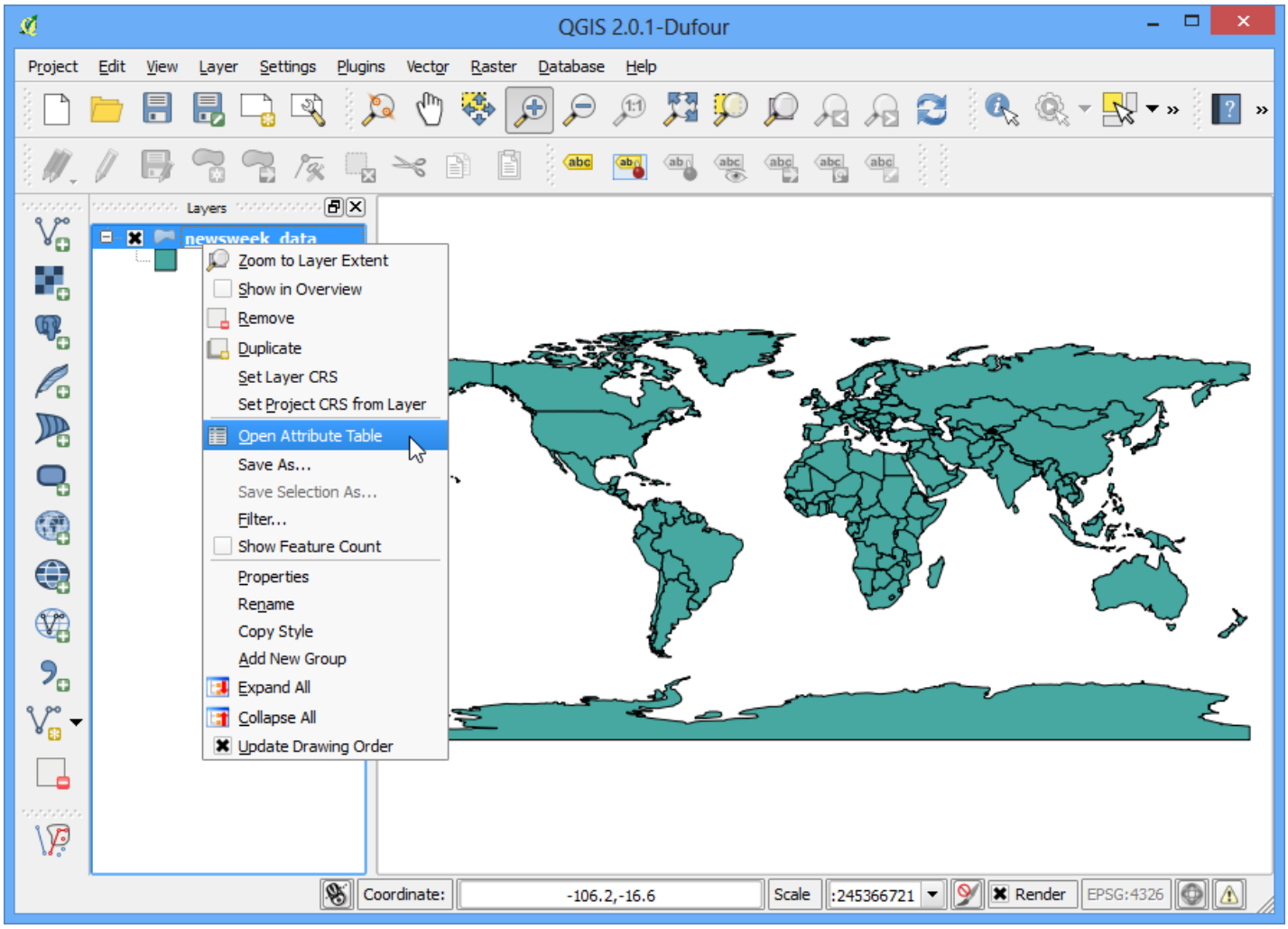
2. Browse to the downloaded `lifeexpectancy.zip` file and click Open. Select `newsweek_data.shp` and click Open. Next you will be prompted for choosing the CRS. Select *WGS84 EPSG:4326* as the Coordinate Reference System (CRS).



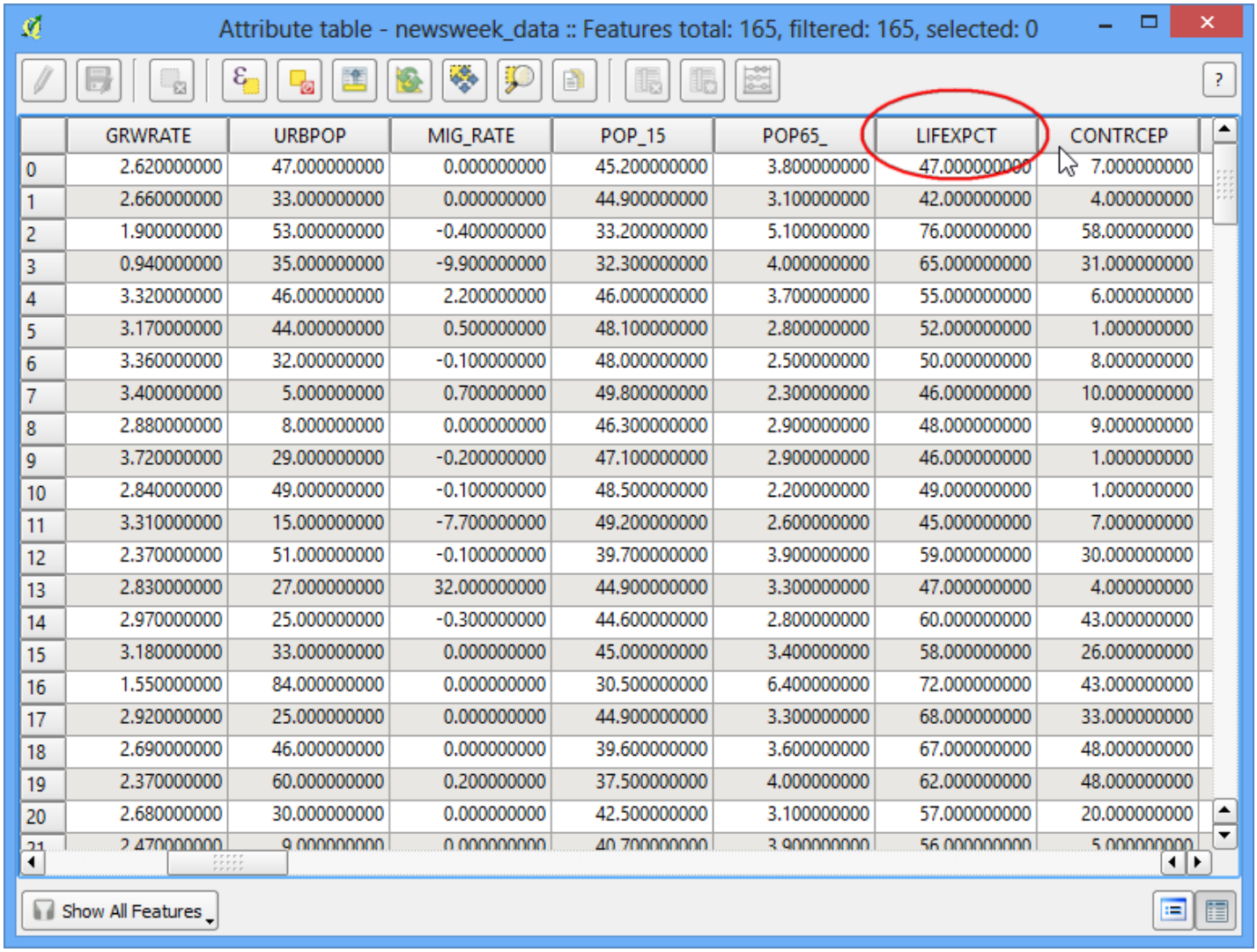
3. The shapefile contained within the zip file is now loaded and you can see the default style applied to it.



4. Right click on the layer name and select Open Attribute Table.

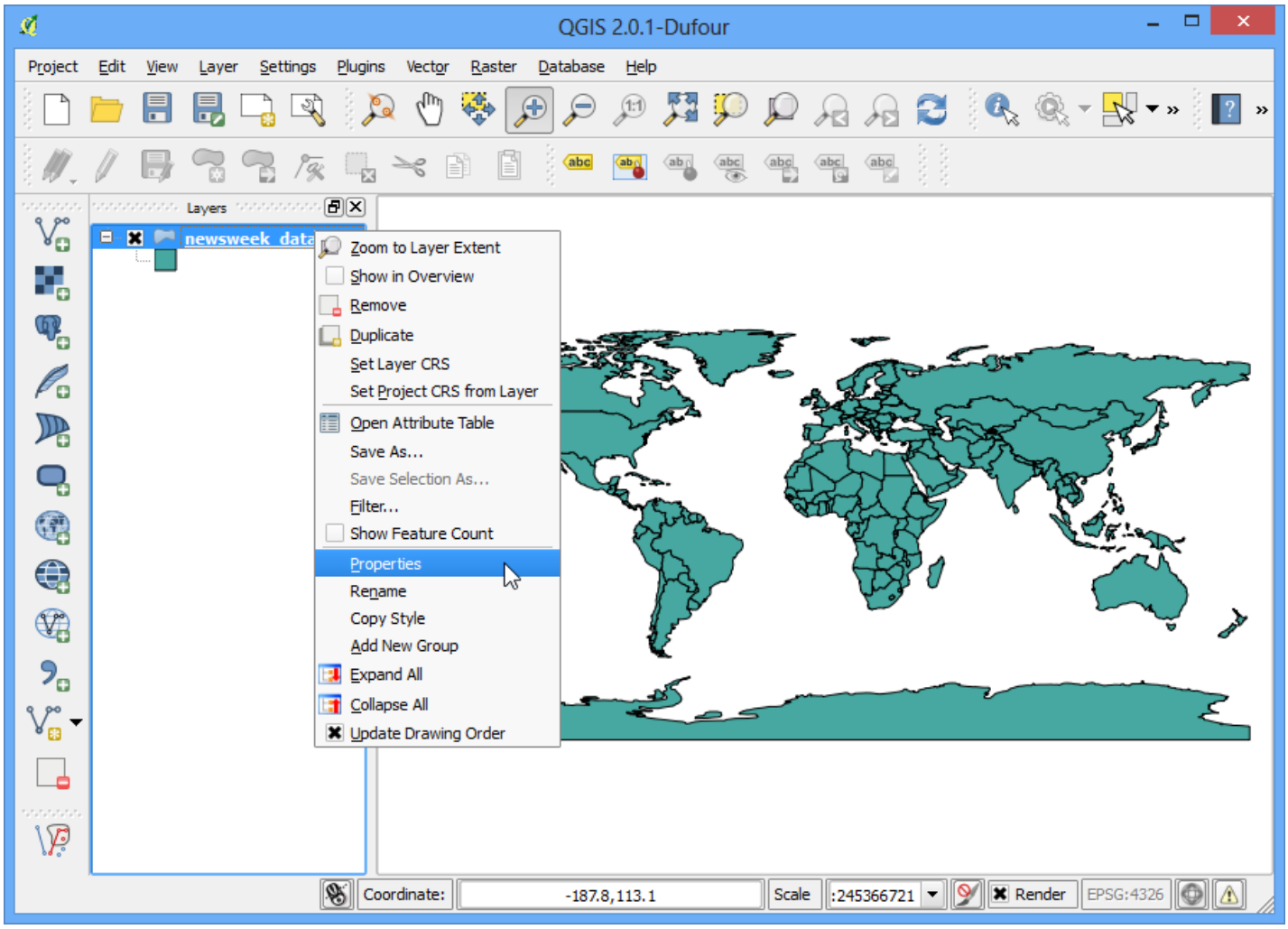


5. Explore the different attributes. To style a layer, we must pick an *attribute* or a *column* that would represent the map we are trying to create. Since we want to create a layer represting life expectancy, i.e. the average age till a person lives in a country, the field LIFEXPCT is the attribute we want to use in styling.

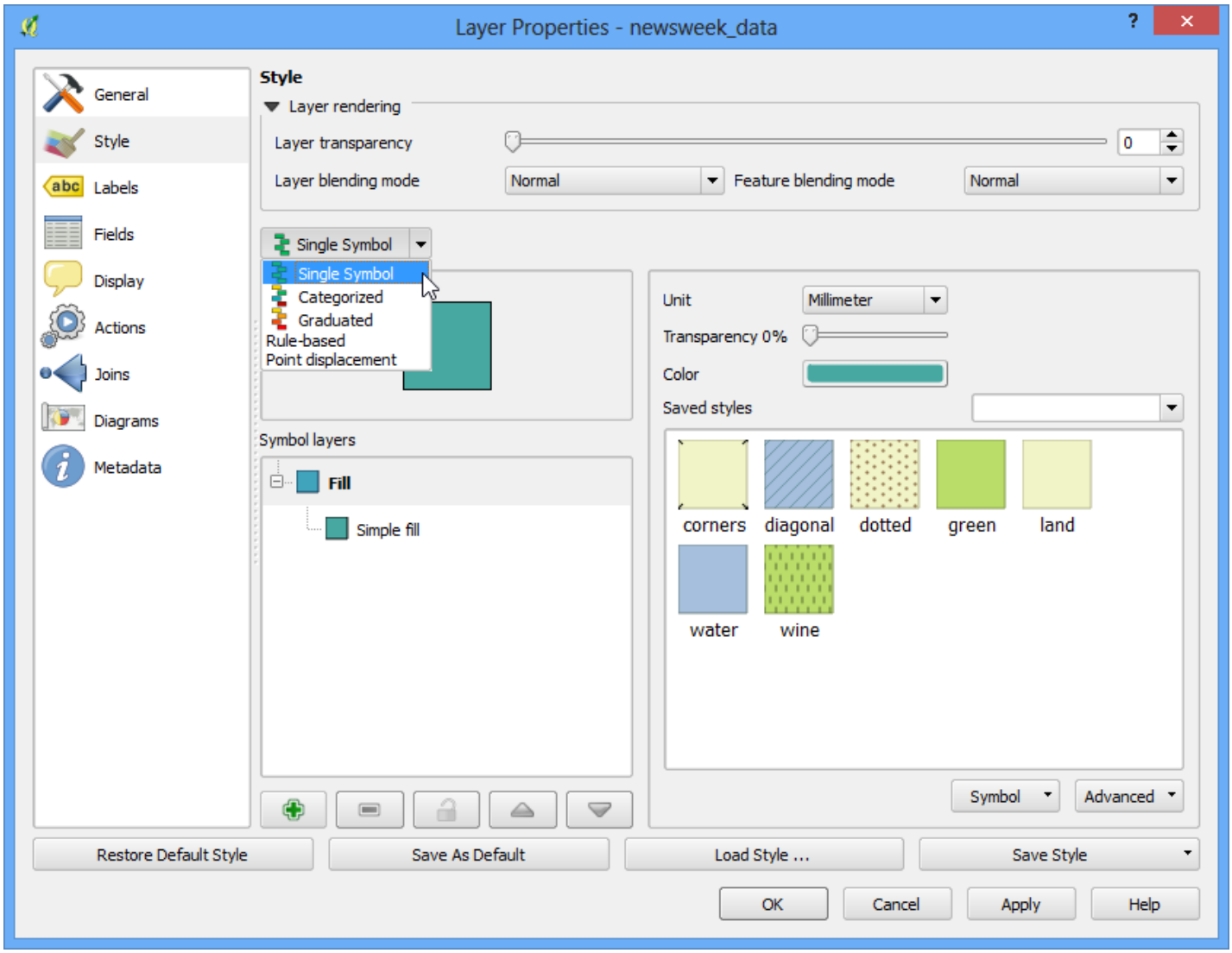


	GRWRATE	URBPOP	MIG_RATE	POP_15	POP65_	LIFEXPCT	CONTRCEP
0	2.620000000	47.000000000	0.000000000	45.200000000	3.800000000	47.000000000	7.000000000
1	2.660000000	33.000000000	0.000000000	44.900000000	3.100000000	42.000000000	4.000000000
2	1.900000000	53.000000000	-0.400000000	33.200000000	5.100000000	76.000000000	58.000000000
3	0.940000000	35.000000000	-9.900000000	32.300000000	4.000000000	65.000000000	31.000000000
4	3.320000000	46.000000000	2.200000000	46.000000000	3.700000000	55.000000000	6.000000000
5	3.170000000	44.000000000	0.500000000	48.100000000	2.800000000	52.000000000	1.000000000
6	3.360000000	32.000000000	-0.100000000	48.000000000	2.500000000	50.000000000	8.000000000
7	3.400000000	5.000000000	0.700000000	49.800000000	2.300000000	46.000000000	10.000000000
8	2.880000000	8.000000000	0.000000000	46.300000000	2.900000000	48.000000000	9.000000000
9	3.720000000	29.000000000	-0.200000000	47.100000000	2.900000000	46.000000000	1.000000000
10	2.840000000	49.000000000	-0.100000000	48.500000000	2.200000000	49.000000000	1.000000000
11	3.310000000	15.000000000	-7.700000000	49.200000000	2.600000000	45.000000000	7.000000000
12	2.370000000	51.000000000	-0.100000000	39.700000000	3.900000000	59.000000000	30.000000000
13	2.830000000	27.000000000	32.000000000	44.900000000	3.300000000	47.000000000	4.000000000
14	2.970000000	25.000000000	-0.300000000	44.600000000	2.800000000	60.000000000	43.000000000
15	3.180000000	33.000000000	0.000000000	45.000000000	3.400000000	58.000000000	26.000000000
16	1.550000000	84.000000000	0.000000000	30.500000000	6.400000000	72.000000000	43.000000000
17	2.920000000	25.000000000	0.000000000	44.900000000	3.300000000	68.000000000	33.000000000
18	2.690000000	46.000000000	0.000000000	39.600000000	3.600000000	67.000000000	48.000000000
19	2.370000000	60.000000000	0.200000000	37.500000000	4.000000000	62.000000000	48.000000000
20	2.680000000	30.000000000	0.000000000	42.500000000	3.100000000	57.000000000	20.000000000
21	2.470000000	9.000000000	0.000000000	40.700000000	3.900000000	56.000000000	5.000000000

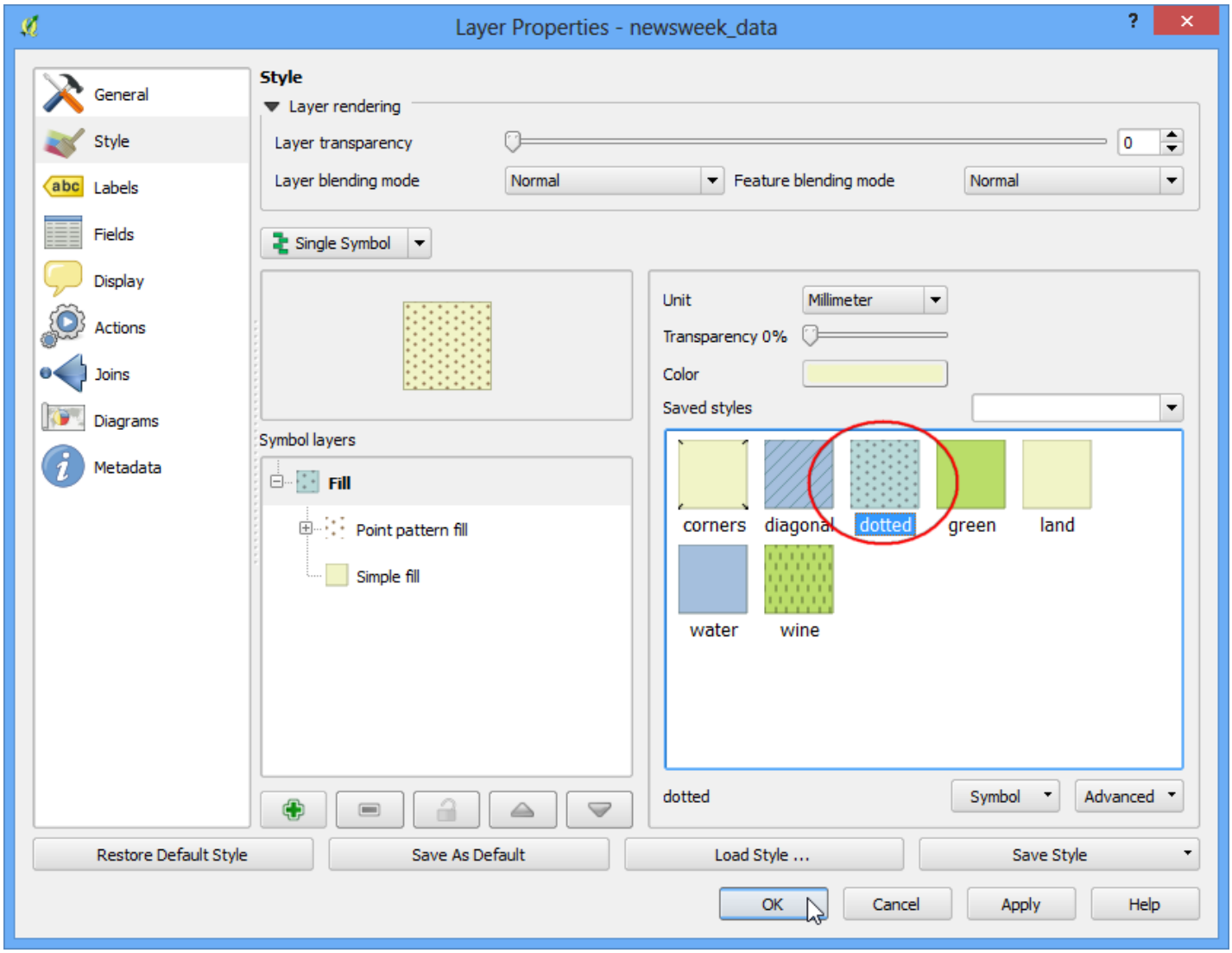
6. Close the attribute table. Right click on the layer again and choose Properties.



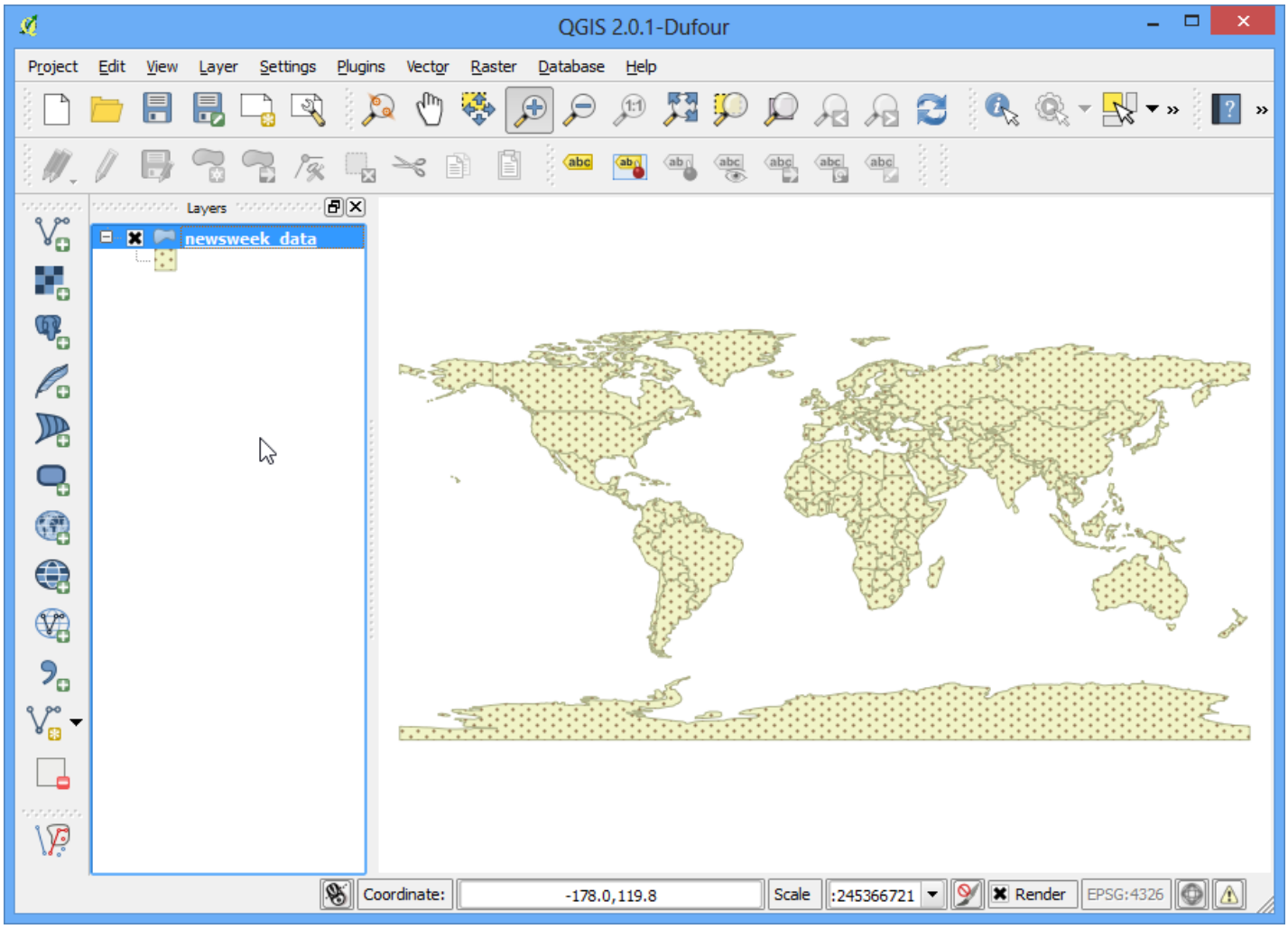
7. The various styling options are located in the Style tab of the Properties dialog. Clicking on the drop-down button inthe Style dialiog, you will see there are five options available - Single Symbol, Categorized, Graduated, Rule Based and Point displacement. We will explore the first three in this tutorial.



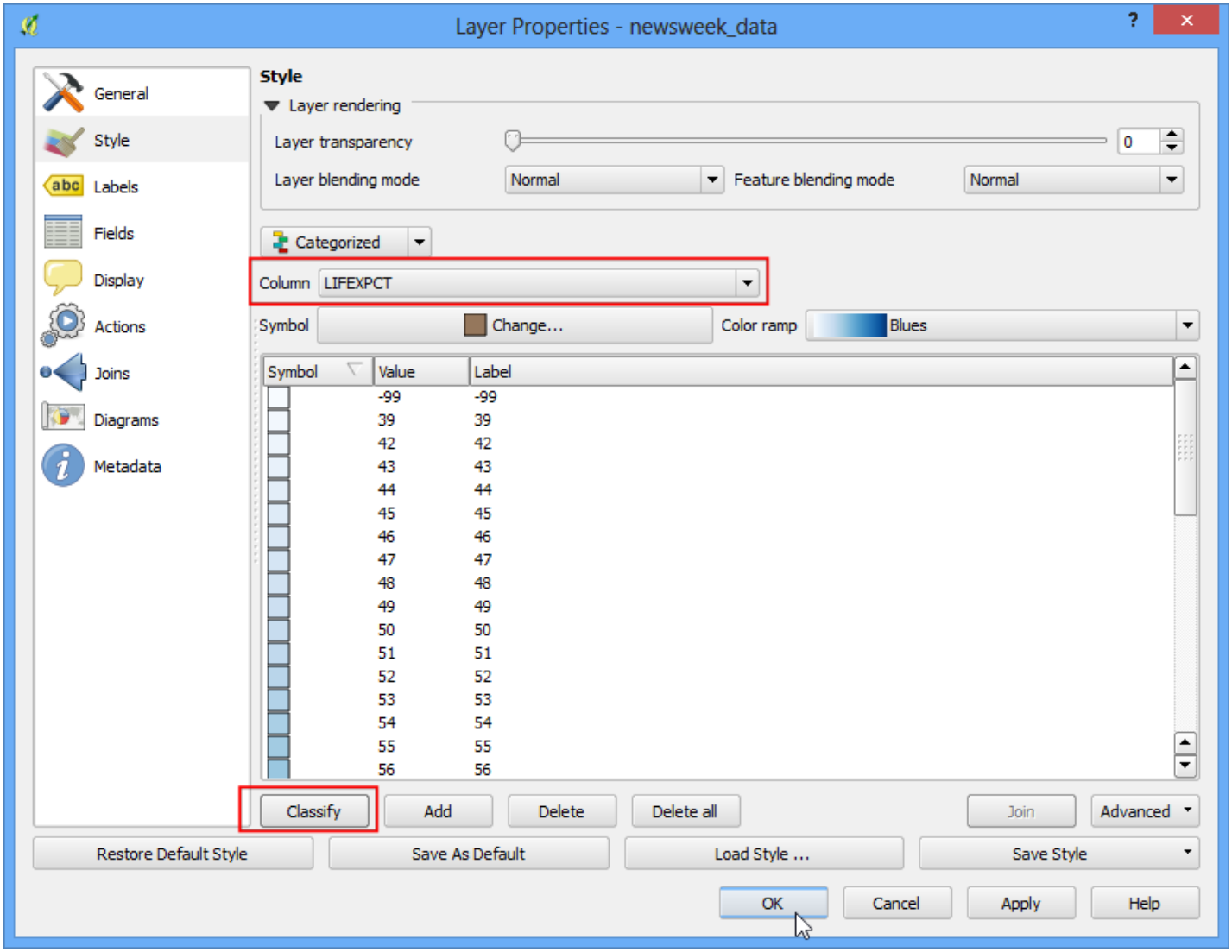
8. Select Single Symbol. This option allows you to choose a single style that will be applied to all the features in the layer. Since this is a polygon dataset, you have two basic choices. You can *fill* the polygon, or you can style with only *outline*. You can choose the dotted pattern fill and click OK.



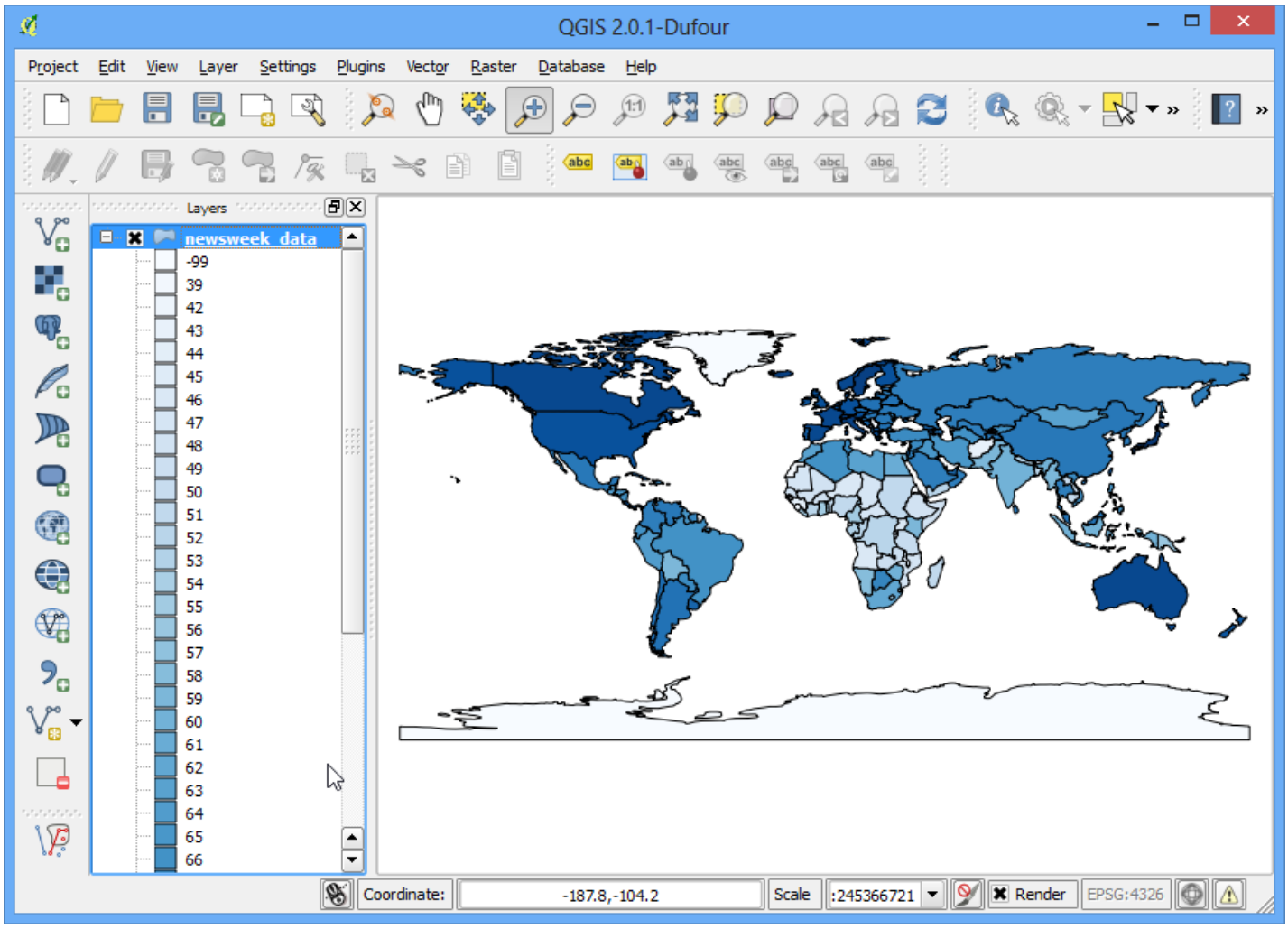
9. You will see a new style applied to the layer with the fill pattern you chose.



10. You will see that this Single Symbol style isn't useful in communicating the life expectancy data we are trying to map. Let us explore another styling option. Right-click the layer again and choose Properties. This time choose Categorized from the Style tab. Categorized means the features in the layer will be shown in different shades of a color based on unique values in an attribute field. Choose LIFEXPCT value as the Column. Choose a color ramp of your choice and click Classify at the bottom. Click OK.



11. You will see different countries appearing in shades of blue. Lighter shades meaning lower life expectancy and darker shades meaning higher life expectancy. This representation of the data is more useful and clearly show how life expectancy in developed countries vs. developing countries. This would be the type of style we set out to create.



12. Let us explore the Graduated symbology type in the Style dialog now. Graduated symbology type allows you to break down the data in a column in unique classes and choose a different style for each of the classes. We can think of classifying our life expectancy data into 3 classes, `LOW`, `MEDIUM` and `HIGH`. Choose LIFEXPCT as the Column and choose 3 as the classes. You will see there are many Mode optionsa vailable. Let us see the logic behind each of these modes. There are 5 modes available. Equal Interval, Quantile, Natural Breaks (Jenks), Standard Deviation and Pretty Breaks. These modes use different statistical algorithms to break down the data into separate classes.

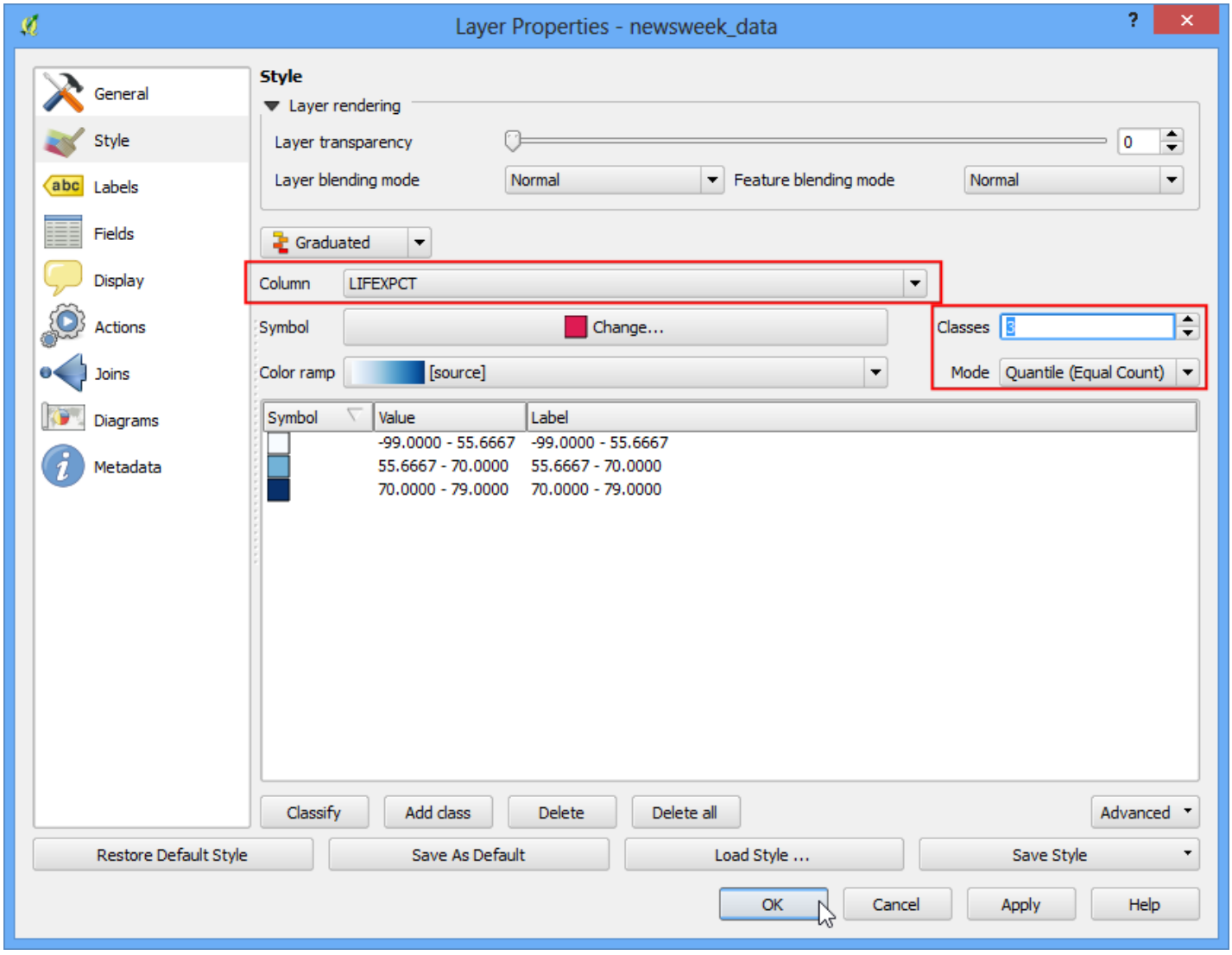
    - Equal Interval: As the name suggests, this method will will create classes which are at the same size. If our data ranges from 0-100 and we want 10 classes, this method would create a class from 0-10, 10-20, 20-30 and so on , keeping each class the same size of 10 units.
    - Quantile - This method will decide the classes such that number of values in each class are the same. If there are 100 values and we want 4 classes, quantile method will decide the classes such that each class will have 25 values.
    - Natural Breaks (Jenks) - This algorithm tries to find natural groupings of data to create classes. The resulting classes will be such that there will be maximum variance between individual classes and least variance within each class.
    - Standard Deviation - This method will calculate the mean of the data, and create classes based on standard deviation from the mean.

- Pretty Breaks - This is based on the statistical package R's pretty algorithm. It is a bit complex, but the *pretty* in the name means it creates class boundaries that are round numbers.

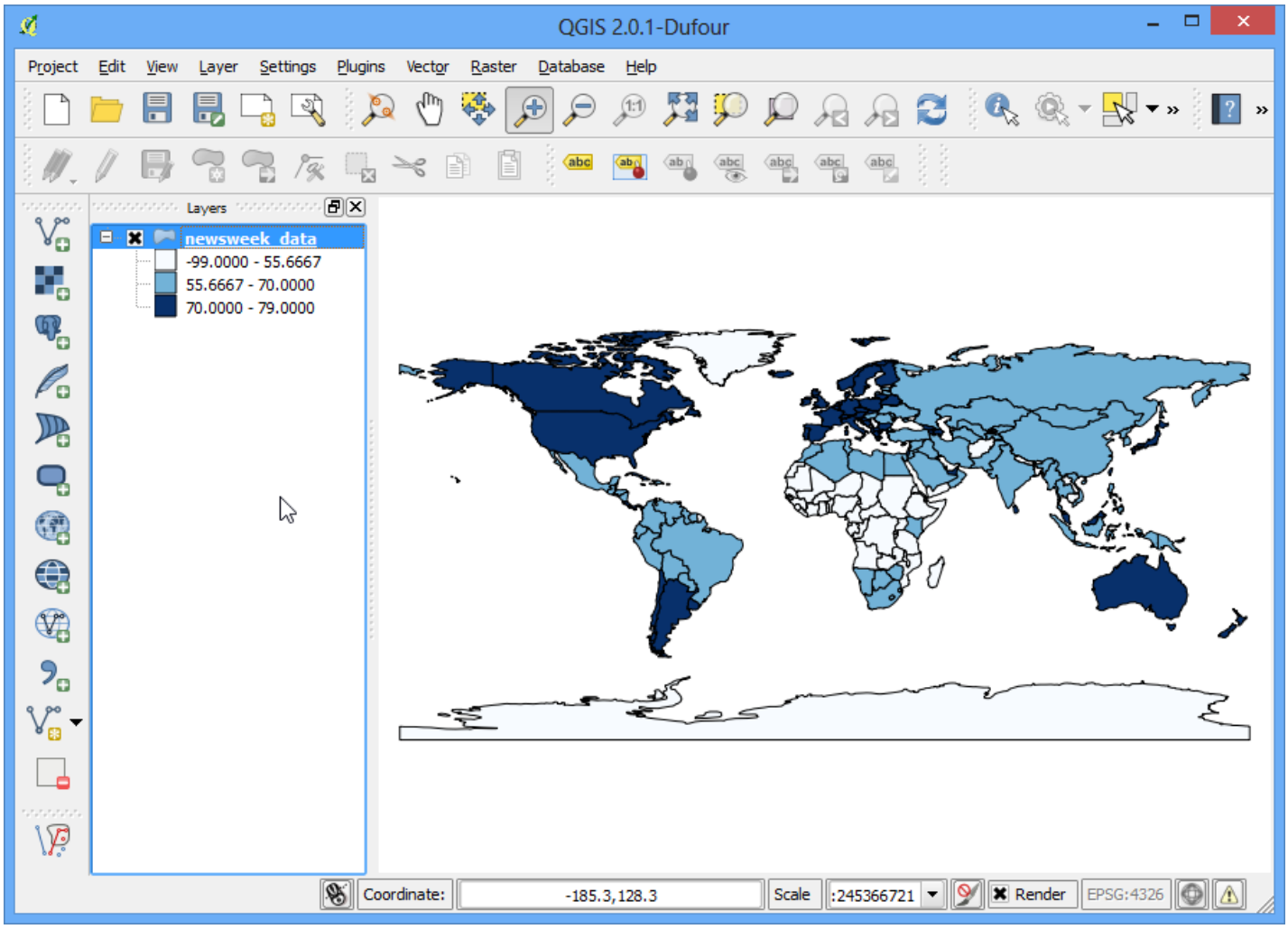
To keep things simple, let's use the Quantile method. Click Classify at the bottom and you will see 3 classes show up with their corresponding values. Click OK.

Note

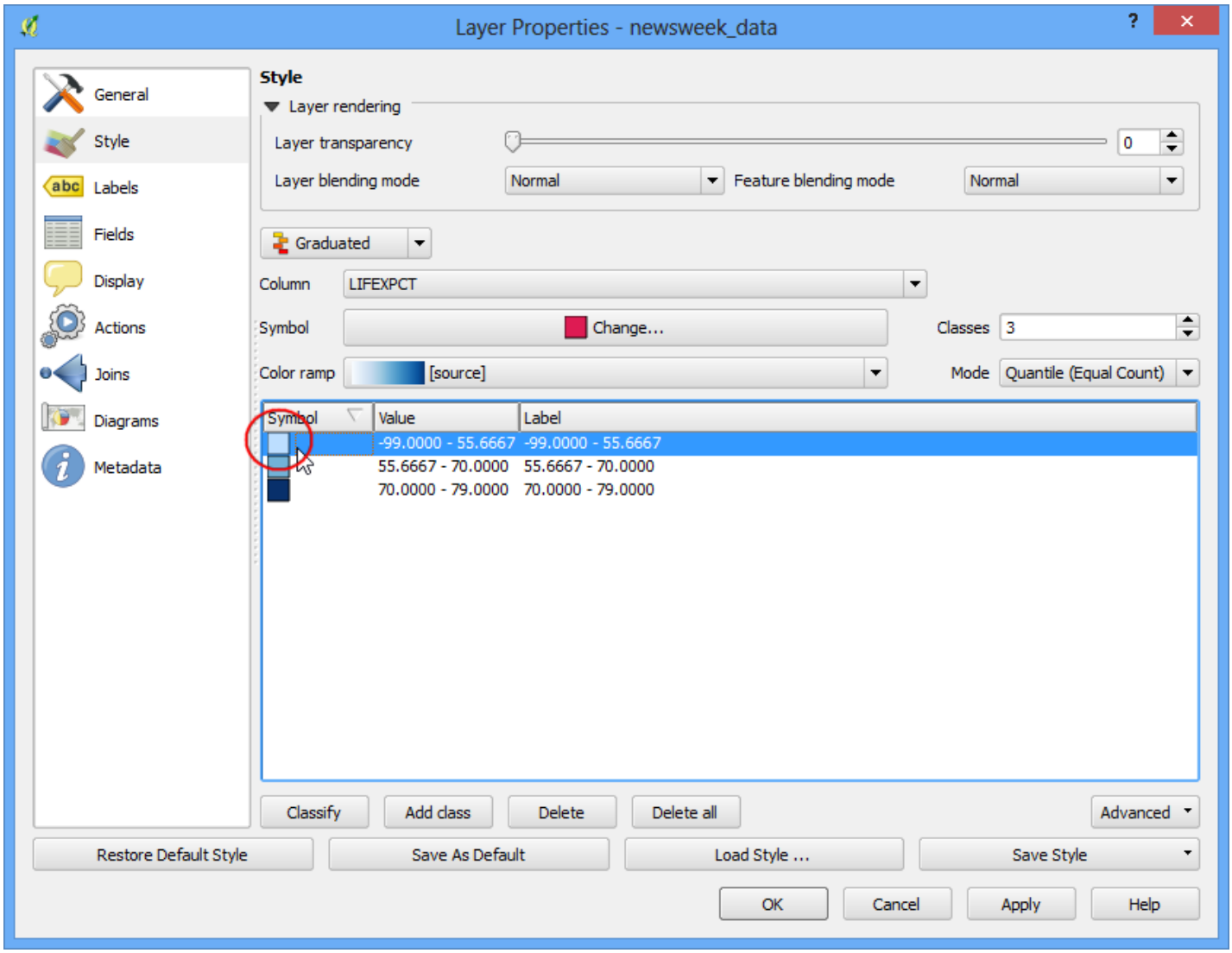
For an attribute to be used in Graduated style, it must be a numeric field. Integer and Real values are fine, but if the attribute field type is String, it cannot be used with this styling option.



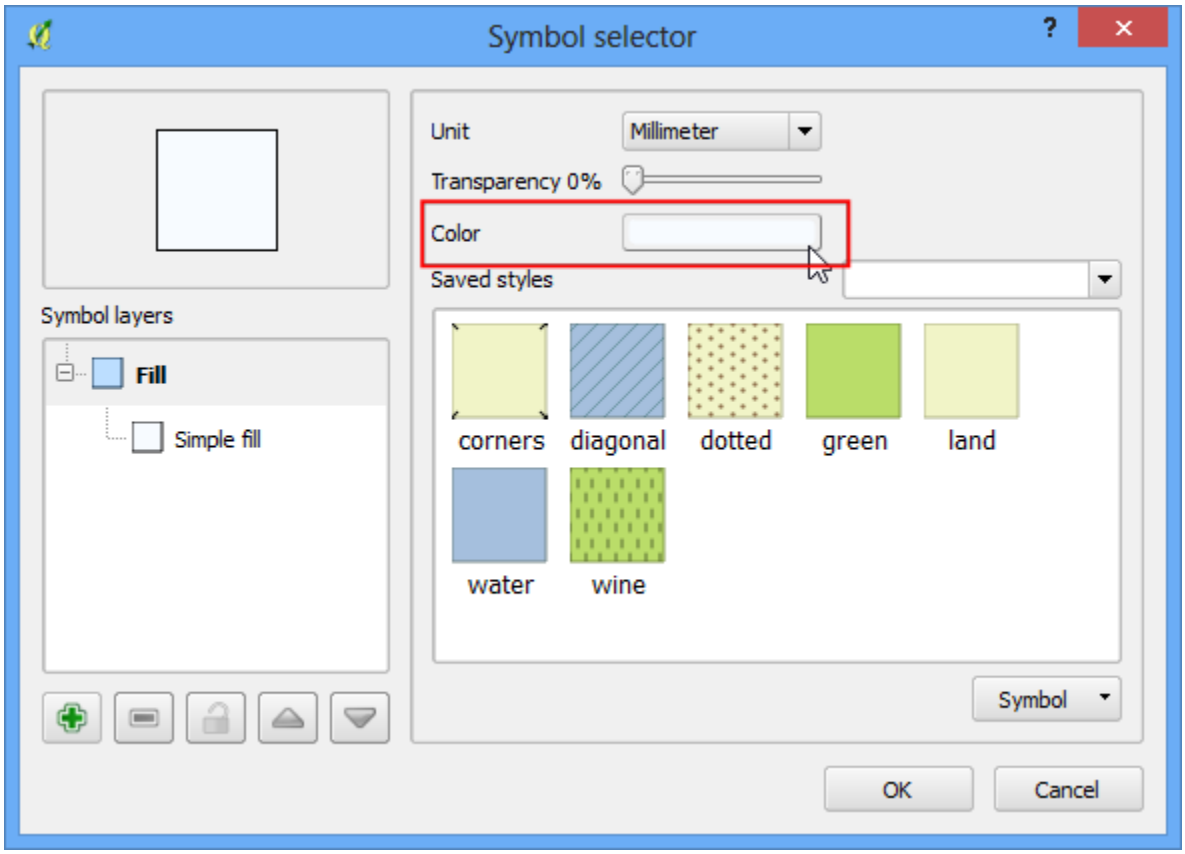
13. You will see a map showing countries in either of 3 colors representing average life expectancy in the country.



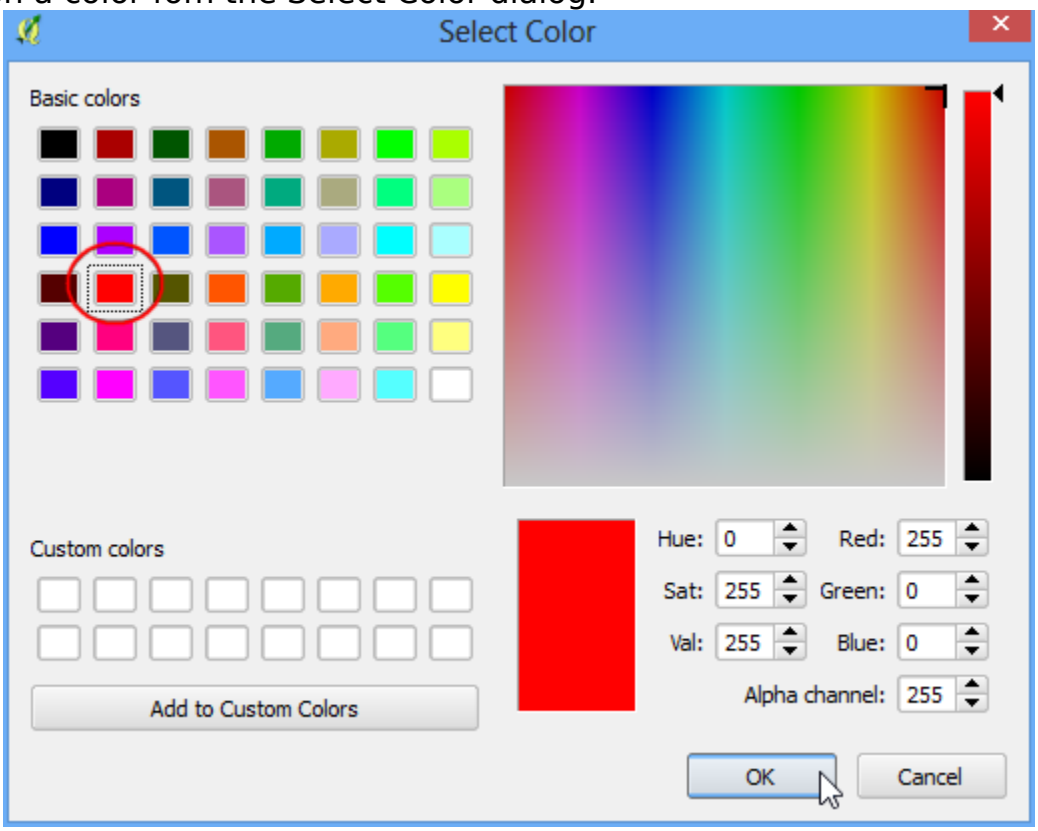
14. Now go back to the Style dialog by right clicking the layer and choosing Properties. There are some more styling options available. You can click on the Symbol for each of the classes and choose a different style. We will choose Red, Yellow and Green fill colors to indicate low, medium and high life expectancy.



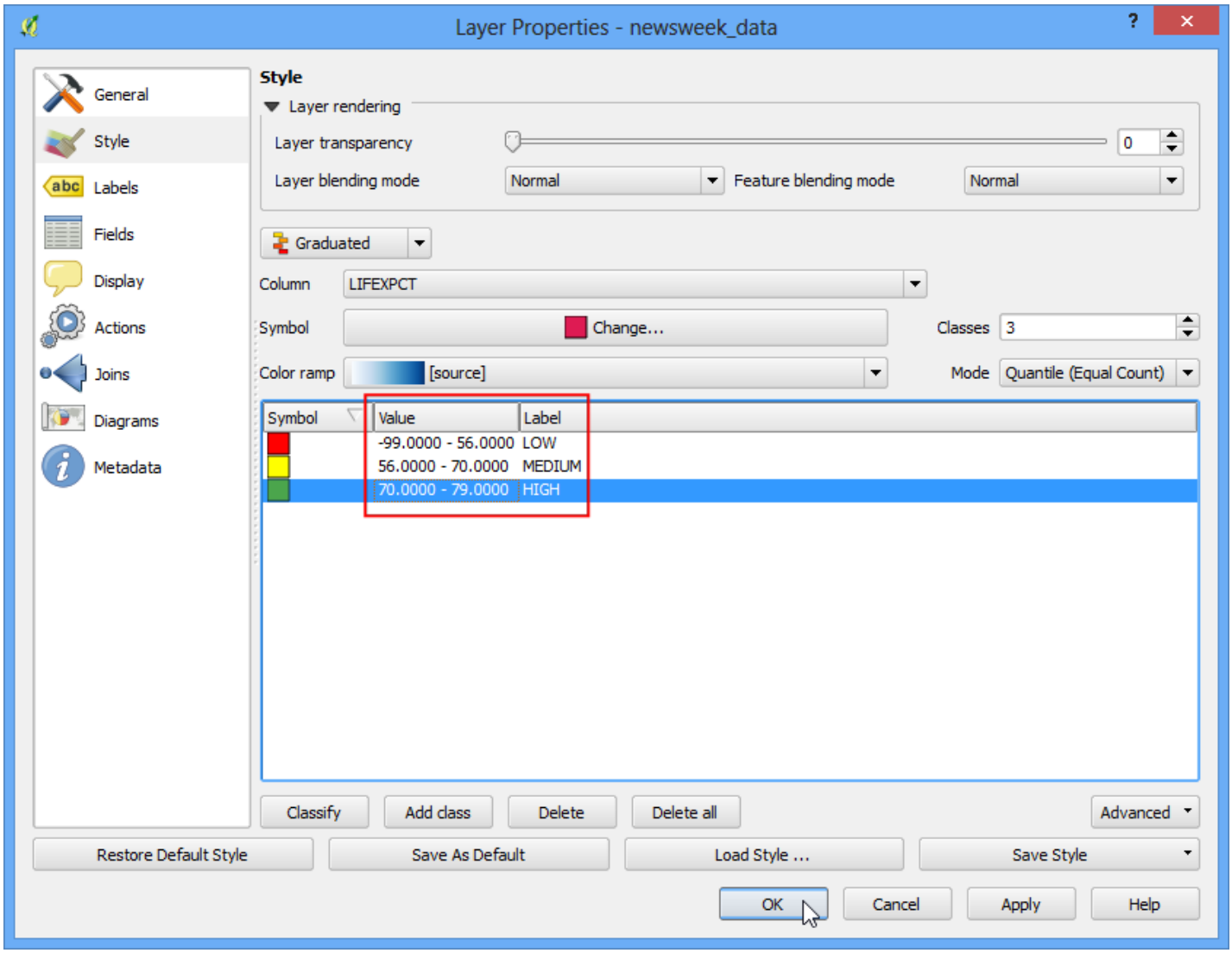
15. In the Symbol Selector dialog, click on Color selector.



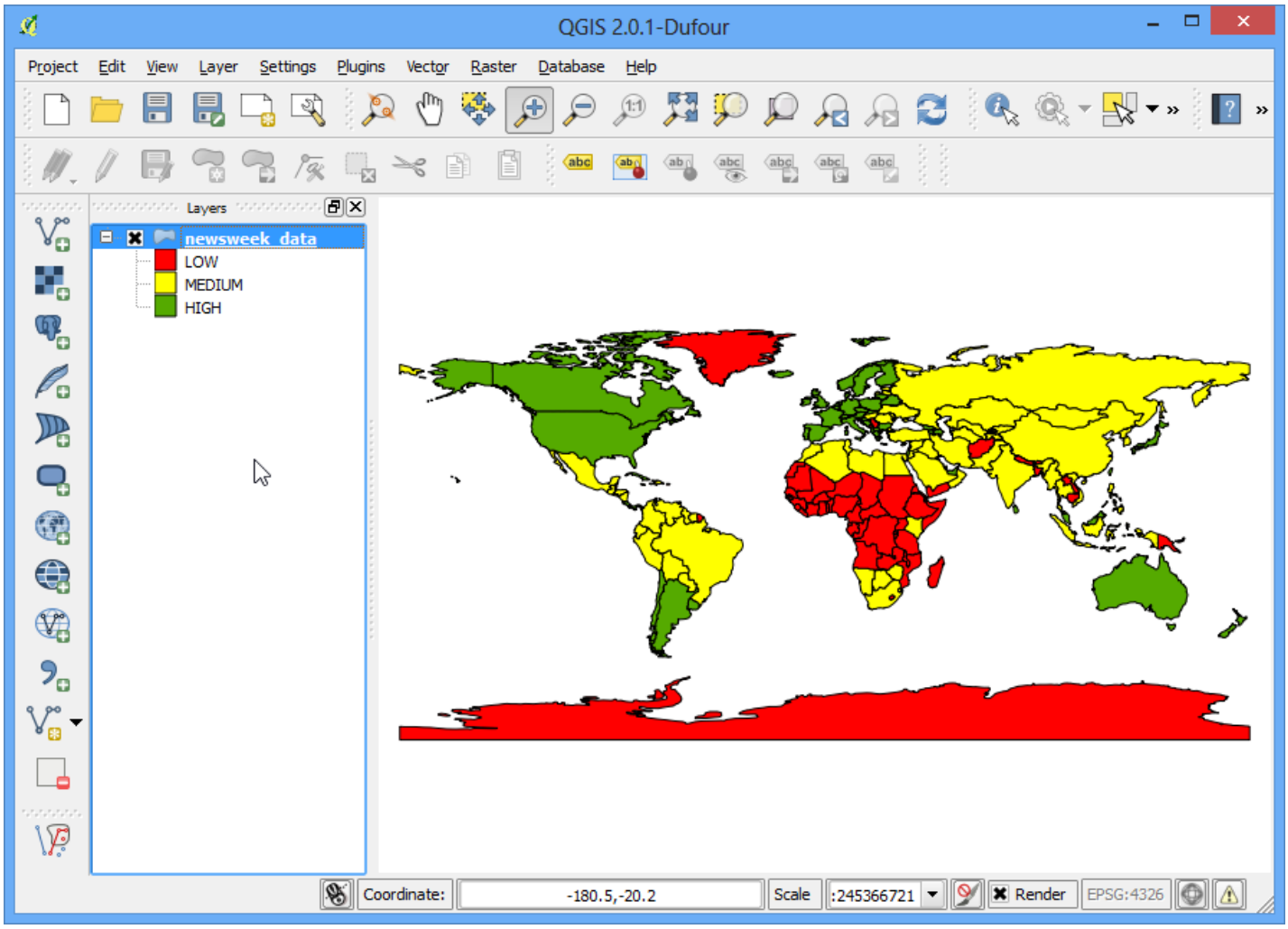
16. Click on a color fom the Select Color dialog.



17. Back in the Layer Properties dialog, you can double-click on the Label column next to each value and enter the text that you want to display. Similarly, you may double-click on the Value column to edit the selected ranges. Click OK once you are satisfied with the classes.



18. This style definitely conveys a lot more useful map than the previous two attempts. There are clearly marked class names and colors to represent our interpretation of the life expectancy values.


QGIS 2.0.1-Dufour
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