GEOG 204 Tutorial 6

Spatial Analysis II

In this tutorial we will explore further the some of the functions used in spatial analysis. Please note that the scenario used is contrived for the purpose of this exercise.

You are provided with geospatial dataset, please familiarise yourself with it by looking at the accompanying documentation as well as the values of the corresponding variables in attribute table.

Imagine you are trying to buy a house in Chicago that you could use for an AirBnB business. Naturally you want the business to succeed and you are also conscious that you don't have unlimited resources.

 What are some specific constraint you will have?

> Here are a few:

- You want to buy in a low crime area
- You will avoid high theft area
- You will consider areas with fewer Airbnb rentals
- You can afford property in a medium income area

The area in which you will focus your housing search will be the area where the above constraints are met. As such you will have to determine what constitutes are low crime area, area with low thefts, etc…

1. Load the data for this tutorial in QGIS. In what your coordinate system are your data?
2. Determine three levels of income, that is low, medium, high.
   a. For this we will use percentiles but QGIS doesn't have a ready-made button for this. Instead you will write some code.
      i. Create a new field called inc_level such that everything below the 30 percentile is low, everything between the 30th and 70th is medium and over 70th percentile is high

```
with_variable('percentile',array_find(array_agg("income_pc"
,order_by:="income_pc"),"income_pc") /
array_length(array_agg("income_pc")),

    CASE

    WHEN @percentile <= 0.3 THEN 'Low'

    WHEN @percentile > 0.3 AND @percentile <= 0.7 THEN
'Medium'

    WHEN @percentile > 0.7 THEN 'High'

    ELSE 'Undefined'

    END

)
```
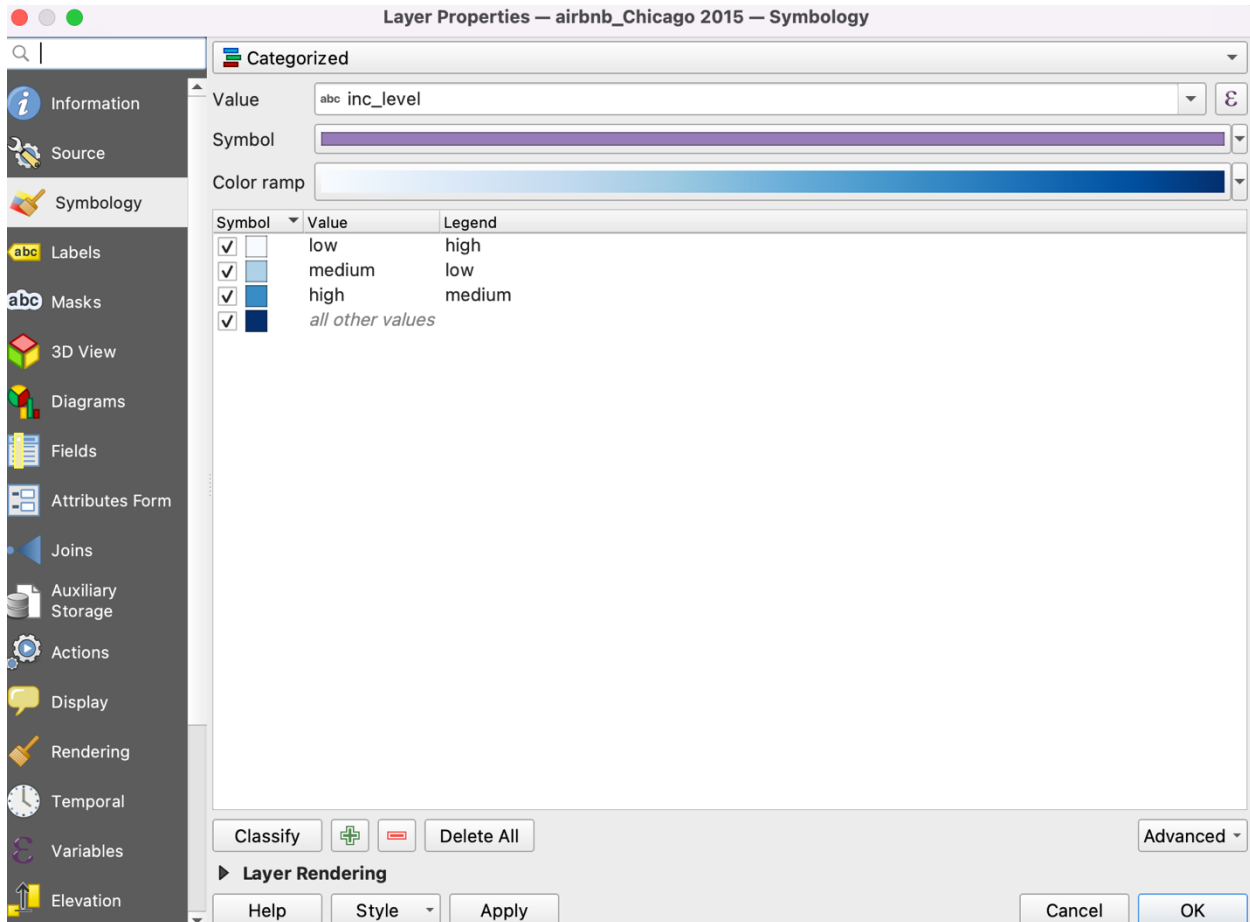
Repeat the above procedure for the num_theft variable and num_spots variable

3. Now duplicate the shapefile such that you can overlay the 3 copies of the same layer
    a. Right click on the layer >> Duplicate Layer
    b. Create a choropleth map showing the levels of income, number of thefts, and number of spots

Where would be the best place to buy a house for an AirBnB business? Use the Selection criteria above the "Select by expression tool"

Hint:

```
inc_level='Low' AND
```