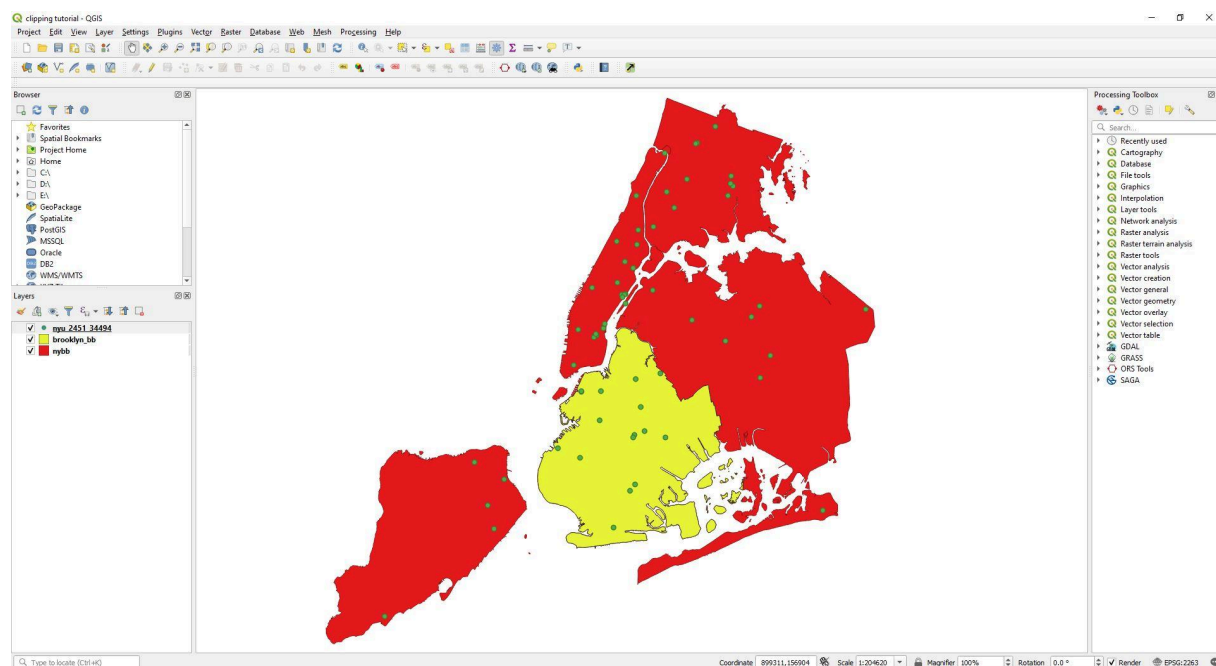


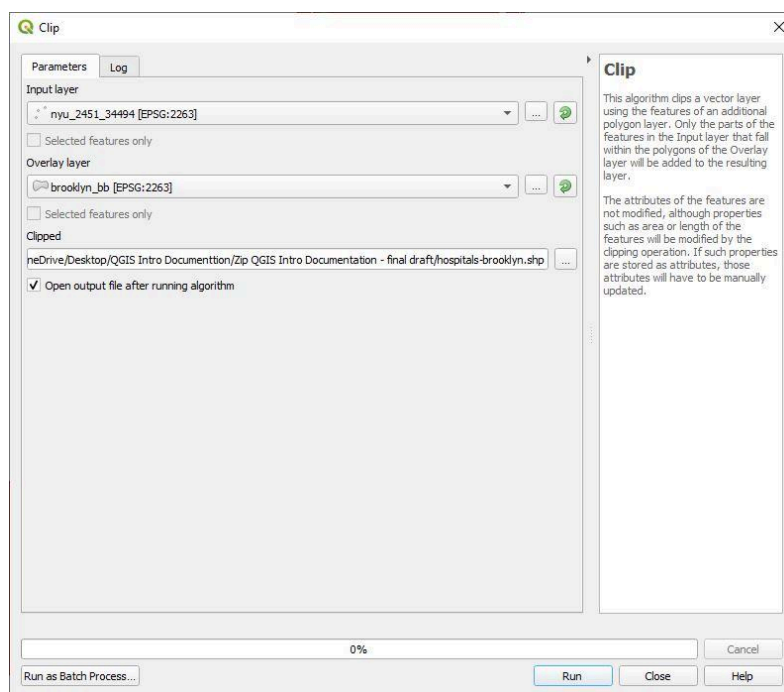
You can use the Clip tool (a type of spatial extract tool) in QGIS to restrict or select certain features from a shapefile. For example, you may be a student of public health interested in studying the distribution of hospitals in an area. You might seek to answer the following questions: Are there enough hospitals in NYC to accommodate the population and are they equally distributed throughout the city? Where can/should a new hospital be built? We'll be working with a point shapefile of NYC hospitals (found [here](#)). Suppose you are focused on Brooklyn and don't need to see the hospitals in the other four boroughs. You can use the clip tool to create a shapefile of hospitals restricted to the Brooklyn borough boundary. The shapefile for the Brooklyn borough boundary can be found [here](#). If you'd like to get a basemap, (i.e. the red map of NYC below and the base for the Brooklyn file) download the [Department of City Planning's map of NYC's borough boundaries](#) clipped to shorelines. The map below shows us what our initial environment should look like once we bring all of our data in.



If you are new to QGIS and trying to figure out how to add data, you can simply **open the folder** in your file manager where all of your data is located, and **drag and drop** it into the layers menu. Another option is to use the file browser located above your layers menu on the left where you can **navigate to**, and **open** a specific folder for easy access to your data & files. Remember to keep everything together! A final method, and perhaps one of the most useful depending on what you're importing, and that's by going through our **Layer** menu on the ribbon in the upper left, so from **Layer** → **Add Layer** → (here you can choose which specific type of layer you want to add but for our purposes you can use **Add Vector Layer** to bring in our shapefiles). It should also be noted in your layer menu on the bottom left, you can change the order of the layers by dragging with your mouse, those at the bottom appear last and those at the top appear first. You can see an example of how things should look in the photo above you. You can also select the check marks on the side of the maps to toggle if they are turned on and appear on your map or not! If there's a check they appear, if there isn't they don't.

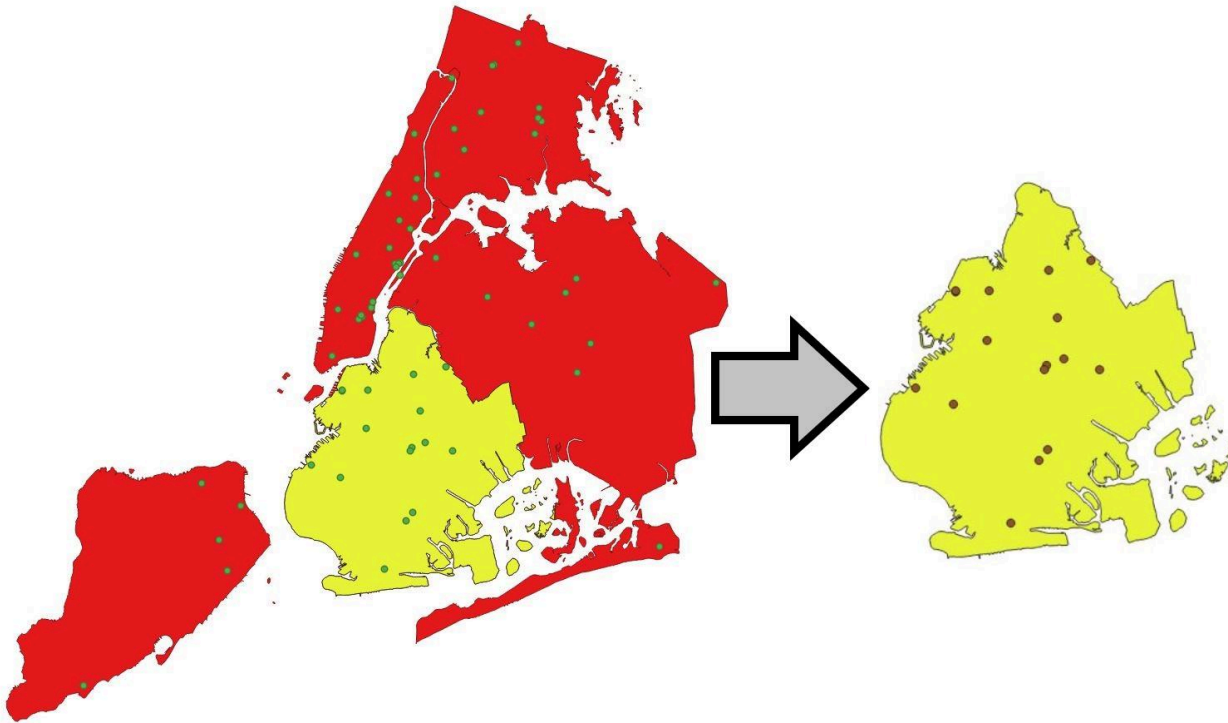
Use the Clip Tool (from the Geoprocessing menu)

- Once the shapefile you wish to clip (hospitals) and the shapefile you'll use to perform the clip (Brooklyn boundary) are added to the Layers Panel, click on the **Vector** menu at the top of the QGIS interface, select Geoprocessing Tools, and then select Clip. (**Vector > Geoprocessing Tools > Clip**)
- For the Input layer, use the **dropdown menu** to select the shapefile which you wish to clip (in this case the hospital point layer). Alternatively, if you have not already added a shapefile to QGIS, you can use the browse icon (three dots in a box) on the right to find the shapefile you'd like to clip. Then select our overlay, which means the feature you'll use to clip your Input layer (in our case our Brooklyn layer). Remember, this is the layer you'll use to restrict or bound the original shapefile. The easiest way to remember it is like putting cardboard over paper to cut the paper into a shape, the input is your paper to cut and the overlay is the cardboard to cut, the image on our right shows what your menu should look like.
- Choose the output location for your clipped shapefile, it's under the clipped menu in your clip menu. If you leave this part blank, it will create a temporary file that will be deleted when you close QGIS, but you can save this temporary file by **right-clicking** it and selecting **save feature as**, or **make permanent**, from there you can save. Usually, it's important to keep all of your files housed together so I recommend creating a folder on your desktop named GIS and then a subfolder for this tutorial to save your file, make sure you save your new clipped file as a shapefile though, as it's the most versatile format for geospatial data out there! There are other options such as a geopackage, however, shapefiles can be used in just about any rendition of GIS, even in python!
- You will see your clipped shapefile overlaying the original shapefile. You can now remove the original shapefile so that only your clipped features remain. Below you can look at the transition between our initial study area to our now clipped study area. Now de-select our original hospital and city layers, to get them to stop appearing on our map.
 - You may encounter a red message in the Clip Analysis Tool that states "No spatial index exists for this layer, performance will be severely degraded" this is normal, a spatial index is a data structure that allows QGIS to examine a spatial object efficiently, and is almost essential



for larger data sets (with thousands of objects) as it greatly improves performance, though in this instance it is not required. Further information about spatial indexing in QGIS can be found [here](#).

Completed Map



For more information on clipping shapefiles in QGIS, click [here](#).