**Choropleth Mapping Activity: Census Data by Meshblock**

1. Open a New Project in QGIS.
2. Download and unzip the file statsnzpopulation-by-meshblock-2013-census-SHP.zip from Stream.

[What are meshblocks](http://archive.stats.govt.nz/methods/classifications-and-standards/classification-related-stats-standards/meshblock/definition.aspx)?

1. Add the meshblocks to your map. Layer > AddLayer > Add Vector Layer. In the Source, Vector Dataset(s) box, browse to the location of your unzipped files from step 2, and population-by-meshblock-2013-census.shp?
2. Right click on the legend entry (the name of the file in the Layers window on the left) and select Open Attribute Table. This shows you the content of the geographic data, but does not show you the geometry (this is shown only graphically in the map in this view).
3. Generate a choropleth map using the population values themselves (non-normalised):
	1. Right click on the legend entry again, and select Properties.
	2. Select Symbology, and in the very top pull down list, select graduated.
	3. In the Column box, select the column that you want to map (in this case, Population).
	4. You can then play with different scales, colours and classes to create a pleasing scheme.
4. Generate a choropleth map using densities:

First we need to calculate the density, and add an attribute containing density, and then we can apply the same technique as we did with population.

* 1. Select a part of NZ to work with, as running these calculations for the whole of NZ use a lot of computer resources and can be slow.
		1. Click on ‘Select Features by…’ button on the top toolbar.
		2. Draw a rectangle around the area that you want to work with (e.g. the top half of the North Island).
		3. Right click on the layer in the legend and select ‘Save As’ (in the more recent versions, this is under Extract). Save it as an ESRI ShapeFile, and enter a file name and location. Select ‘Save only selected features’ and ‘Add saved file to map’.
		4. Select OK. You will then have a new layer to work with. You can remove the original layer by right clicking and selecting Remove. Then perform the following steps on the new layer.
	2. Add a new attribute containing the area:
		1. Open the attribute table again.
		2. Select the field calculator button.
		3. Ensure that ‘create a new field’ is ticked, enter an attribute name (make sure you leave it set to whole number, or it will take too long to calculate and possibly crash your computer).
		4. In the central list box (under search), select Geometry, then select $area.
		5. Select OK (it might take a while to generate as it has to do a lot of calculations).
		6. You will see a new attribute added containing the area of each meshblock, which QGIS has calculated using the geometry.
	3. Add a new attribute containing the density (population/area):
		1. Select the field calculator button again.
		2. Expand the Fields and Values item in the central list box (where last time you selected Geometry).
		3. Double click on Population, which will add “Population” into the left list box, then select the / symbol, then double click “area”. So the left box will contain ("Population" / "area") \* 10000.
		4. Select OK, and you will see a new attribute containing density.
	4. Use the same steps as for 5, but instead of selecting population, select density as the attribute to map.