

Mapping with CartoDB (Singapore Edition)

In this exercise we are going to use election data to build a map of the 2011 election results in Singapore.

In order to complete this exercise you require a CartoDB account. This can be created at <http://cartodb.com>

This exercise requires two key datasets:

1. The electoral boundaries of Singapore in 2011
2. The election results in 2011

Both datasets are available from the course website.

Step 1 - Upload data

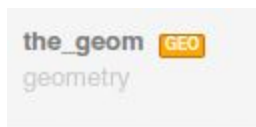
Once you are logged into cartoDB you need to add a new dataset. From the drop down at the top (near your username) select the datasets tab.



In order to create maps in cartoDB we first need to upload some data. To do this find the “**new dataset**” link on the right hand side and upload the **electoral boundaries data file**. This file is a **KML** file containing a set of polygons and names of the various electoral districts in Singapore.



Step 2 - First maps



Polygon

Once uploaded you will be presented with a tabular view of the data in this KML file. Looking through the table you should be able to find a column that has the **geo** icon displayed next to the column header.

This means that cartoDB has found some data it understands and can represent this on a map. It will also tell you the data type, in this case “**polygon**”.

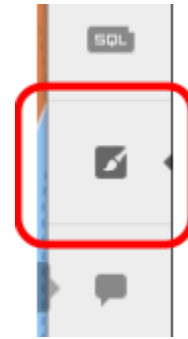
In order to view the map, simply click **map view** at the top of the screen.



We will ignore the colours for now and focus on the boundaries and data being displayed on the map. In order to make navigating easier, let's first add the names of each district to the map.

From the **sidebar** on the right of the screen, click the **wizards** icon.

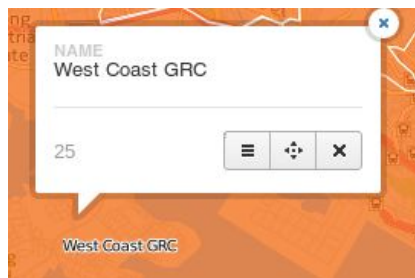
This will bring in a side panel from which you can edit the display properties of the map. Keep the display in **simple** mode and change the **Label Text** to display the name of the district on the map.

A horizontal configuration panel. On the left, the text 'Label Text' is displayed. To its right is a dropdown menu with the word 'name' selected and a small downward-pointing arrow on the right side of the menu.

You may choose to edit the font style and position of the text as you see appropriate.

Step 3 - Fixing data points

CartoDB has a rich map view and allows for some very powerful editing. You will notice on the west coast of Singapore, the West Coast GRC does not seem to cover all areas of Singapore.



To fix this we can **click** on this region and select **edit geometry**.

This will allow you to simply drag the boundary points to their correct locations to include the parts of land not included in our input file. Once complete, click **done**.

Step 4 - Election data and merging

With the election boundaries mapped we now need to upload the voting data. This has been prepared and is available via the course website.

In order to upload the data, first navigate back to your dashboard by clicking the **back** link next to the table/map title in the top left of the screen.



From the dashboard, follow the instructions in **step 1** to upload the election votes data. Once uploaded, feel free to take a look at the contents of the file. You will notice that the file

has no geometry data and only contains data pertaining to the parties that won the election in each district.

In order to merge this data with our boundaries dataset this is best done from the **boundaries table**. To return to your boundaries table **press the back button** again to return to your dashboard and then select the boundaries table. Ensure that you are in **data view**.



In order to merge the two tables, select the **merge tables** option from the sidebar (ensuring you are in **data view**).

From the next screen select **Column Join**. Note that cartoDB can do a spatial join, which is really useful for counting points inside polygons.

From the next screen ensure that you **merge all columns** from both tables and **select the bullet point next to name in both columns** (as shown below).

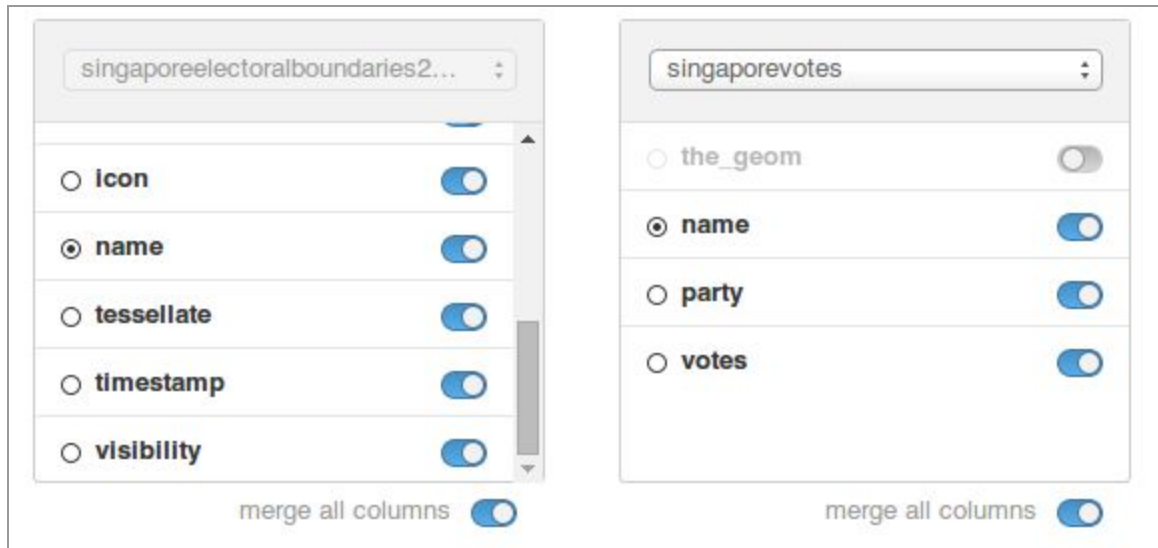
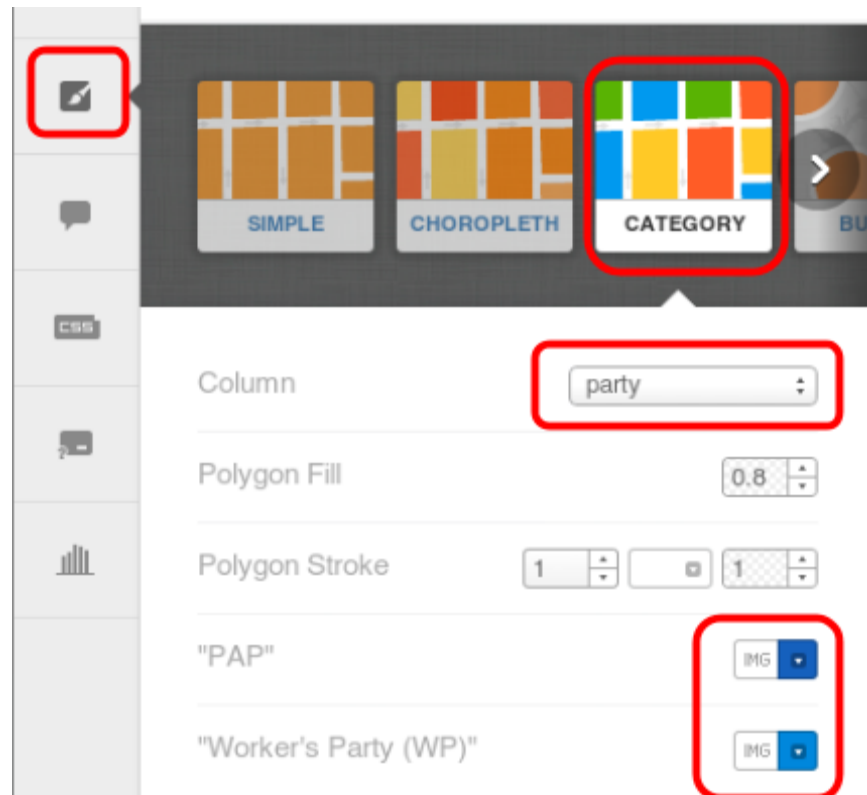


Table	Column	Selected	merge all columns
singaporeelectoralboundaries2...	Icon	<input type="radio"/>	<input checked="" type="checkbox"/>
	name	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
	tessellate	<input type="radio"/>	<input checked="" type="checkbox"/>
	timestamp	<input type="radio"/>	<input checked="" type="checkbox"/>
	visibility	<input type="radio"/>	<input checked="" type="checkbox"/>
singaporevotes	the_geom	<input type="radio"/>	<input checked="" type="checkbox"/>
	name	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
	party	<input type="radio"/>	<input checked="" type="checkbox"/>
	votes	<input type="radio"/>	<input checked="" type="checkbox"/>

Once done click **merge tables**. This will create you a new table.

Step 5 - Showing election results

Once again select the **wizards icon** from the sidebar and this time select **category** from the options. This time select the **column name party** and you will see that the map will update to show the two parties that won different districts during the 2011 election.

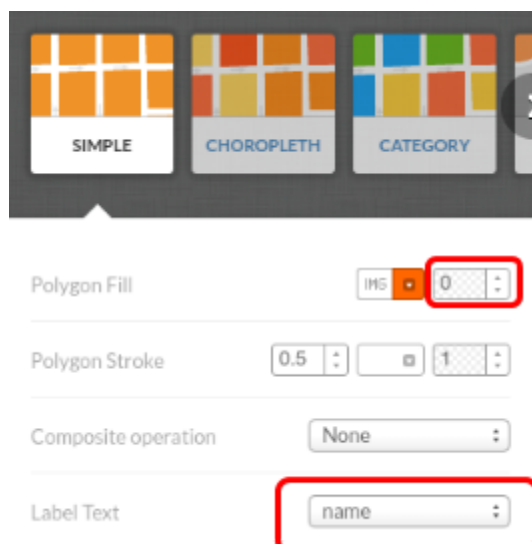


For completeness, you could also add the proper party colours in the section at the bottom of the screen. PAP is colour code “#1560bd” and Worker’s Party is “#0087dc” according to wikipedia (http://en.wikipedia.org/wiki/Category:Singapore_political_party_colour_templates)

Step 6 - Showing region names (again)

You will note that in shading the regions per the party that won each has resulted in the loss of the region names.

Fortunately we can add this back in by adding a new layer. You will find this button on the right hand side above where you just customised the map using a wizard.



From the datasets screen **select the merge dataset** that was last created in step 4 and click **add layer**.

You can then follow the wizard instructions in step two to select a simple map where the label text is the name of the region.

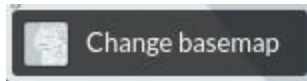
To show the party colours again you need to make the fill colour of this layer transparent. This can be done by setting the Polygon fill option next to the colour to **0**.

Sharing and embedding your map

Note: You can embed and share your map directly from CartoDB, making it easy to include on other websites. To do this you will need to create a visualisation (button top right) and then click the share icon (shown right) in the map.



Changing the base map



Carto has lots of options for the type of base map you use. They are all open licensed maps each suit different needs.

Why not try the simple watercolour one as shown on the right.



Extension exercise - Building friendliness

On the course website you will find a building friendliness (disability access data) about buildings in Singapore. Why not see if you can upload and use this data in some way. There are lots of guides to using CartoDB available from <http://docs.cartodb.com/tutorials.html>