

# Tutorial for creating a ward KML file and combining it with parking data

In the [first tutorial](#), we learned how to map the top 20 spots in Toronto where people got the highest number of tickets for parking too close to a fire hydrant. Now we want to take that process one step further by placing those hot spots on to the city's municipal boundaries or wards in Fusion Tables.

However, first we have to convert the file containing the wards into a KML (Keyhole Markup Language) file a format that FT will accept. And to do so, we'll use the open-source mapping program, Qgis.

Let's get started.

You'll find the city ward file in Toronto's [open data site](#). Click on the first option (Oct 2009 ("MTM 3 Degree Zone 10. NAD27")) in the "city ward" file, which will be downloaded as a zip file.

Each ward is further subdivided into a number of voting subdivisions (there are approximately 1,650 voting subdivisions in total). Voting subdivisions could be linked to city blocks or individual addresses in the case of an apartment or condominium building. Ward and subdivision boundaries do not overlap each other.

\*The current wards were established by the Province of Ontario based on the 22 federal ridings which existed in 1997. City Council split the federal ridings in half to create the current 44 wards.

## Comment

This data set includes the boundaries for the City of Toronto's 44 municipal wards.

### Data download

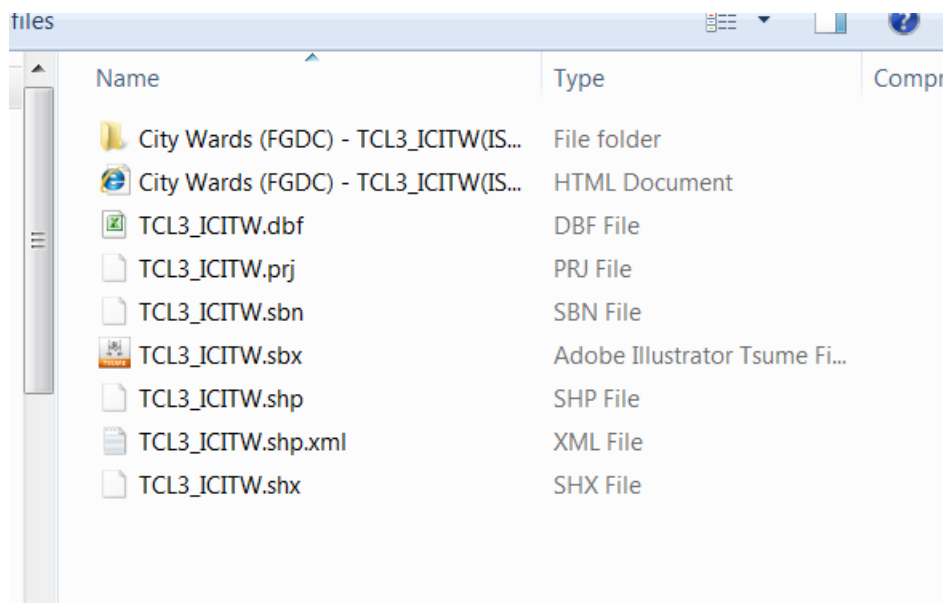
- [Oct 2009 \(MTM 3 Degree Zone 10. NAD27\)](#)
- [May 2010 \(WGS84 - Latitude / Longitude\)](#)
- [May 2010 \(MTM 3 Degree Zone 10. NAD27\)](#)
- [View Data \(June 2011\)](#)

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Back to: [Data catalogue](#)

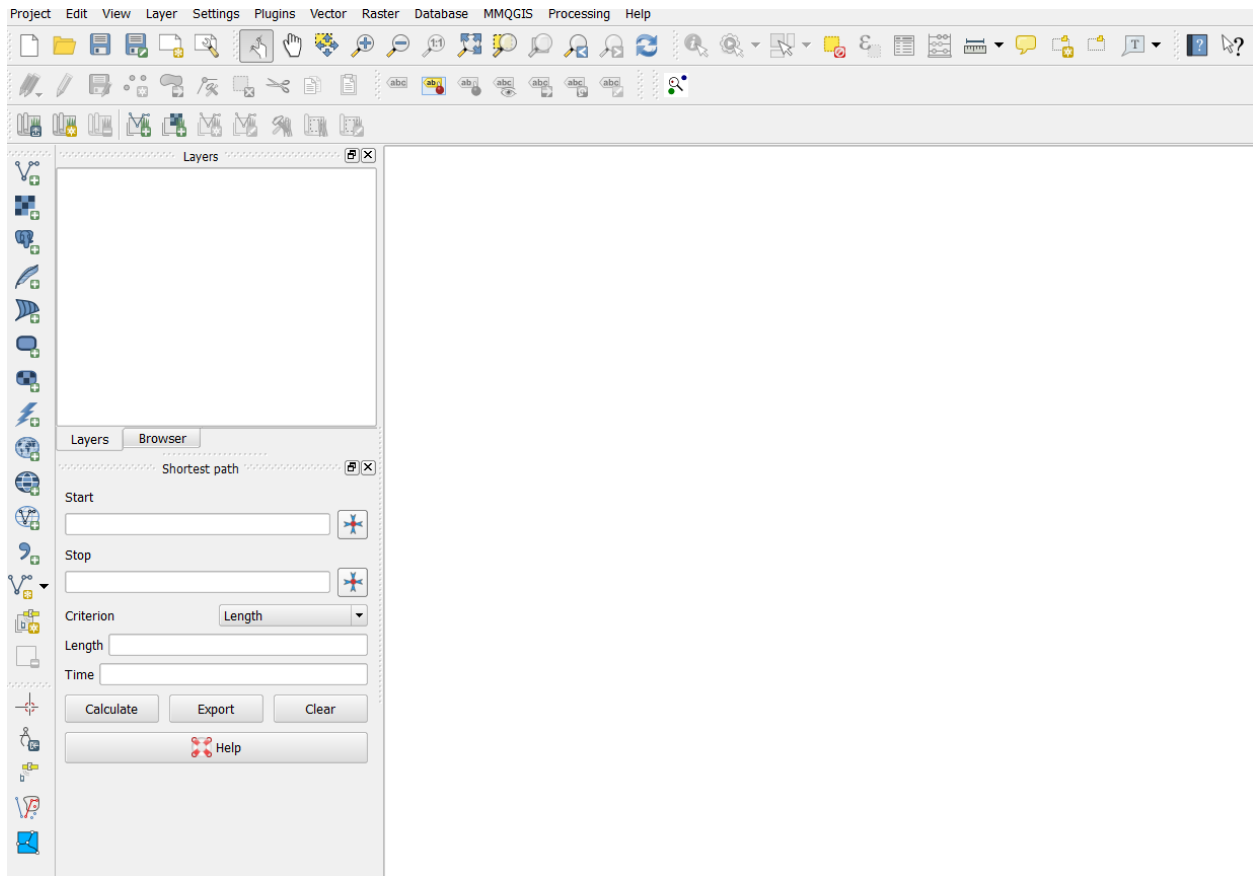
Save the zip file in a folder and extract the contents.

Before we continue, a quick word about a shape file. It is a proprietary format that [ArcGIS](#) uses. Shape files contain geographic boundaries -- everything from parks to political boundaries. In this case, Toronto's city wards. But in order to display this file, a mapping program like ArcGIS, or Qgis, need other data such as information about the wards, such as the names, and other files that tell the program where to place the boundaries. This is why shape files come with lots of company, which you can see in the screen grab below.

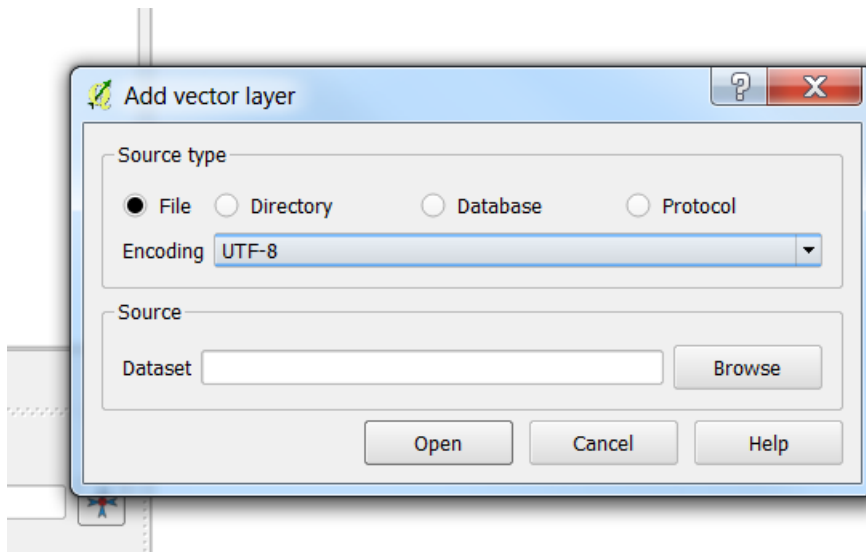


We're interested in the file with the "shp" (TCL3\_ICITW.shp) extension.

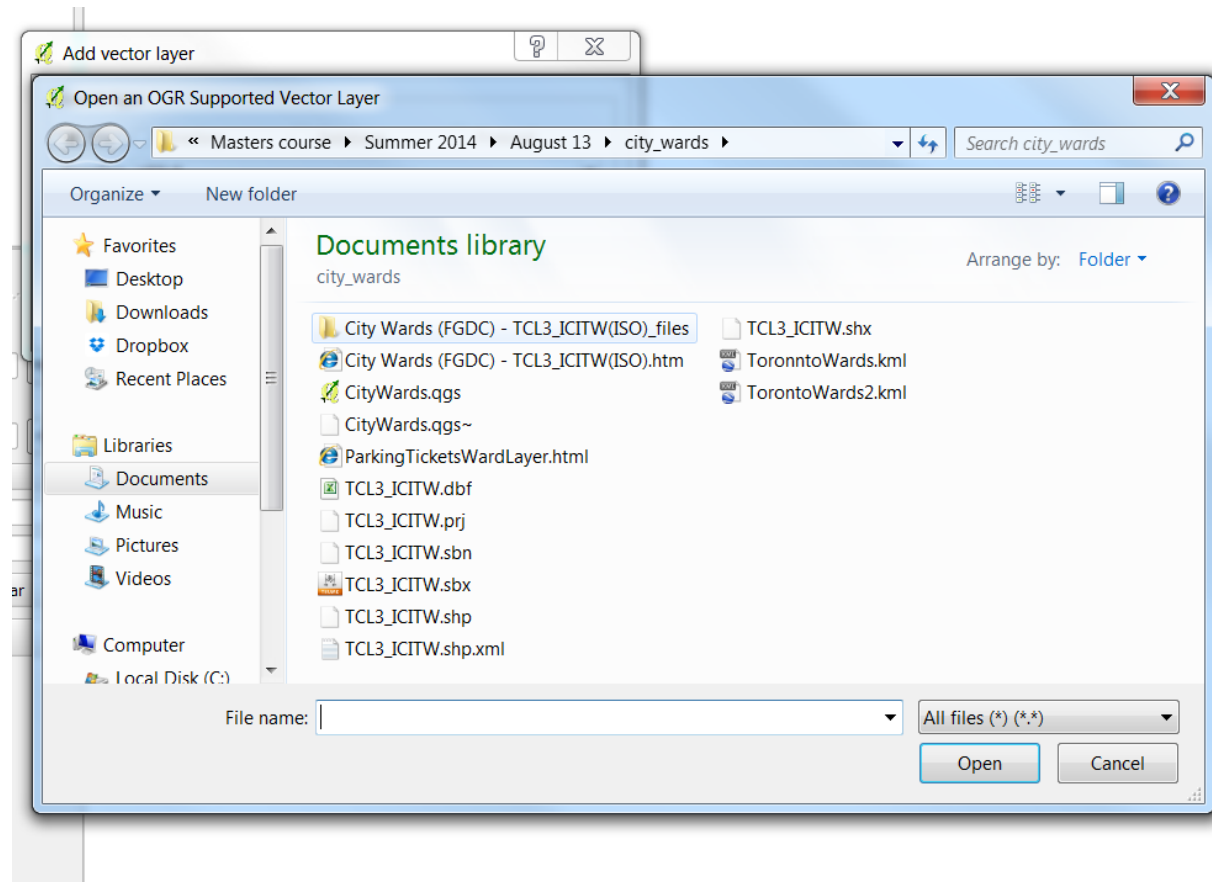
Now, back to the Qgis part of the tutorial. Open Qgis and use the "Add Vector Layer" icon to select the shape file. Pull the file into Ggis. You may be using a newer version, but your screen should look like something like this screen grab.



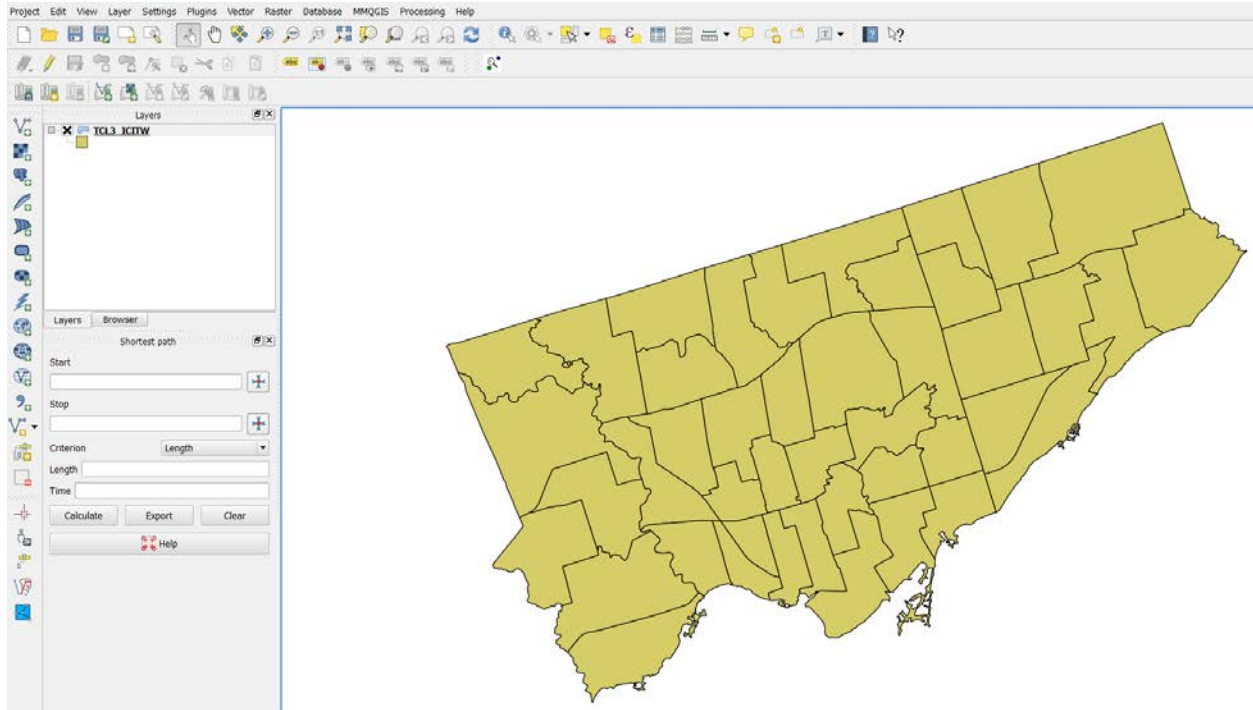
Select the Add Vector Layer, the one circled to the left in the screen grab. It produces a dialog box like the one below.



Browse to find the shape file, which should be in an easy-to-locate folder.



Select the shape file, and then select the “Open” tab in the “Add Vector Layer” dialogue box to produce the result below.



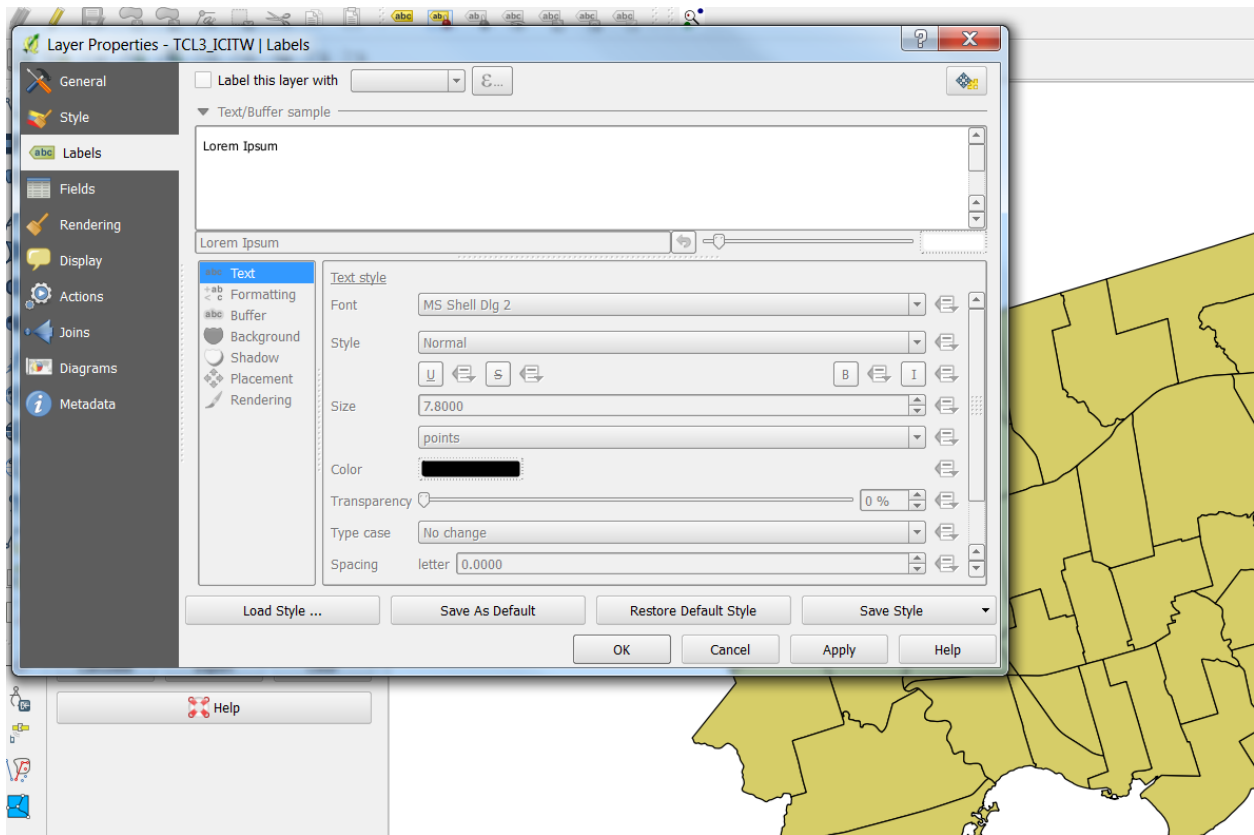
Right click on the icon in the Layers menu box, and select the “Open Attribute Table” option to produce Qgis uses to produce the file that you see.

Attribute table - TCL3\_ICITW :: Features total: 44, filtered: 44, selected: 0

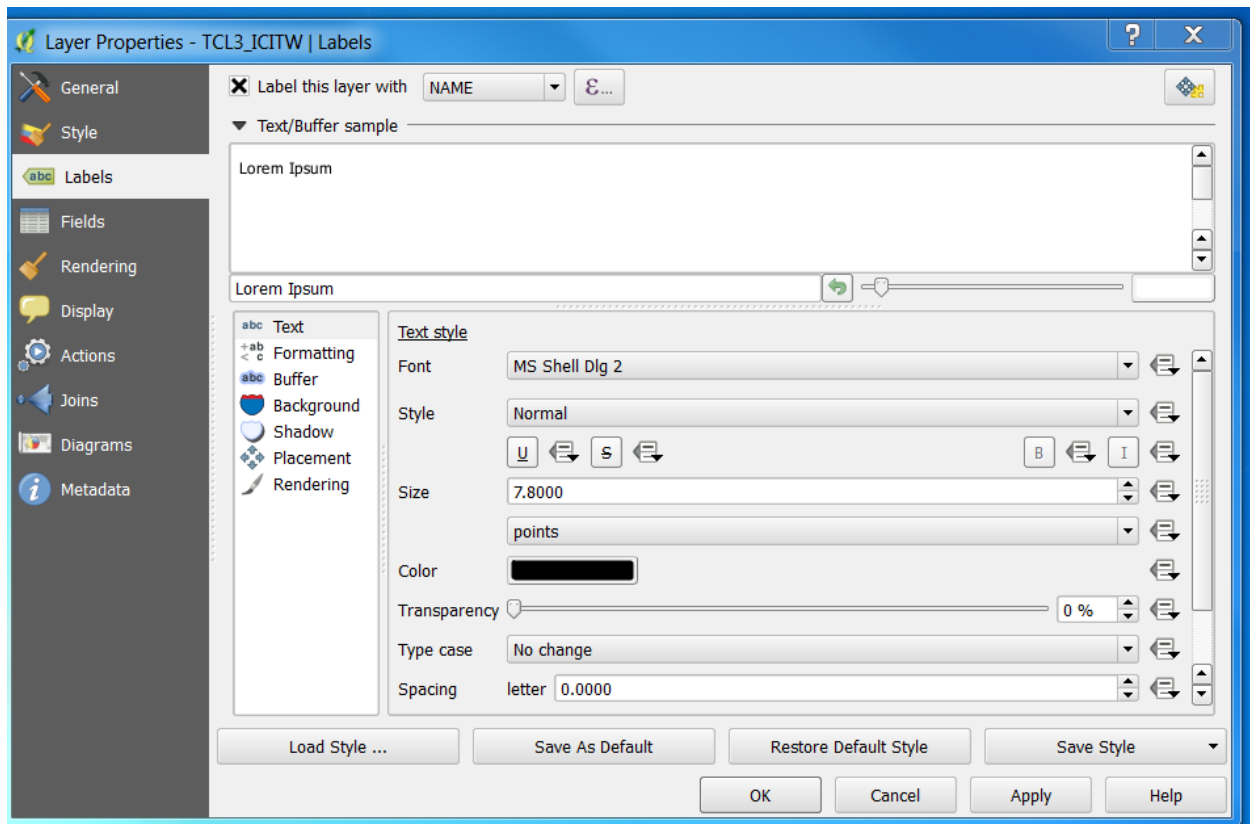


	GEO_ID	CREATE_ID	NAME	SCODE_NAME	LCODE_NAME	TYPE_DESC	TYPE_CODE	OBJECTID	SHAPE_AREA	SHAPE_LEN
0	14630026	63519	Scarborough-...	41	EA41	Ward	CITW	1	0.00000000000	0.00000000000
1	14630028	63519	Scarborough ...	44	EA44	Ward	CITW	2	0.00000000000	0.00000000000
2	14630024	63519	Scarborough-...	42	EA42	Ward	CITW	3	0.00000000000	0.00000000000
3	14630027	63519	Scarborough-...	39	EA39	Ward	CITW	4	0.00000000000	0.00000000000
4	14630035	63519	Willowdale (24)	24	NO24	Ward	CITW	5	0.00000000000	0.00000000000
5	14630029	63519	Scarborough-...	40	EA40	Ward	CITW	6	0.00000000000	0.00000000000
6	14630036	63519	Don Valley Ea...	33	NO33	Ward	CITW	7	0.00000000000	0.00000000000
7	14630037	63519	Willowdale (23)	23	NO23	Ward	CITW	8	0.00000000000	0.00000000000
8	14630039	63519	York West (8)	08	NO08	Ward	CITW	9	0.00000000000	0.00000000000
9	14630031	63519	Scarborough ...	38	EA38	Ward	CITW	10	0.00000000000	0.00000000000
10	14630040	63519	York West (7)	07	WE07	Ward	CITW	11	0.00000000000	0.00000000000
11	14630041	63519	Don Valley Ea...	34	NO34	Ward	CITW	12	0.00000000000	0.00000000000
12	14630010	63519	Don Valley We...	25	NO25	Ward	CITW	13	0.00000000000	0.00000000000
13	14630030	63519	Scarborough ...	43	EA43	Ward	CITW	14	0.00000000000	0.00000000000
14	14630038	63519	York Centre (...)	10	NO10	Ward	CITW	15	0.00000000000	0.00000000000
15	14630043	63519	York Centre (9)	09	NO09	Ward	CITW	16	0.00000000000	0.00000000000
16	14630033	63519	Scarborough ...	36	EA36	Ward	CITW	17	0.00000000000	0.00000000000
17	14630032	63519	Scarborough ...	37	EA37	Ward	CITW	18	0.00000000000	0.00000000000
18	14630044	63519	Etobicoke Nor...	01	WE01	Ward	CITW	19	0.00000000000	0.00000000000
19	14630019	63519	Eglinton-Lawr...	15	NO15	Ward	CITW	21	0.00000000000	0.00000000000
20	14630034	63519	Scarborough ...	35	EA35	Ward	CITW	22	0.00000000000	0.00000000000
21	14630012	63519	Don Valley We...	26	NO26	Ward	CITW	23	0.00000000000	0.00000000000
22	14630017	63519	York South-W...	11	WE11	Ward	CITW	24	0.00000000000	0.00000000000
23	14630045	63519	Etobicoke Nor...	02	WE02	Ward	CITW	25	0.00000000000	0.00000000000
24	14630015	63519	Toronto-Danfo...	29	SO29	Ward	CITW	26	0.00000000000	0.00000000000
25	14630021	63519	York South-W...	12	WE12	Ward	CITW	28	0.00000000000	0.00000000000
26	14630016	63519	Beaches-East ...	32	SO32	Ward	CITW	29	0.00000000000	0.00000000000
27	14630013	63519	Beaches-East ...	31	SO31	Ward	CITW	30	0.00000000000	0.00000000000
28	14630050	63519	St. Paul's (22)	22	SO22	Ward	CITW	31	0.00000000000	0.00000000000
29	14630020	63519	St. Paul's (21)	21	SO21	Ward	CITW	32	0.00000000000	0.00000000000
30	14630052	63519	Toronto-Danfo...	30	SO30	Ward	CITW	33	0.00000000000	0.00000000000
31	14630046	63519	Etobicoke Cen...	04	WE04	Ward	CITW	34	0.00000000000	0.00000000000
32	14630051	63519	Toronto Centr...	27	SO27	Ward	CITW	35	0.00000000000	0.00000000000
33	14630056	63519	Davenport (18)	18	SO18	Ward	CITW	36	0.00000000000	0.00000000000
34	14630047	63519	Etobicoke Cen...	03	WE03	Ward	CITW	38	0.00000000000	0.00000000000
35	14630054	63519	Toronto Centr...	28	SO28	Ward	CITW	39	0.00000000000	0.00000000000
36	14630053	63519	Trinity-Spadin...	20	SO20	Ward	CITW	40	0.00000000000	0.00000000000
37	14630048	63519	Etobicoke-Lak...	05	WE05	Ward	CITW	43	0.00000000000	0.00000000000
38	14630049	63519	Etobicoke-Lak...	06	WE06	Ward	CITW	44	0.00000000000	0.00000000000

Close the table to get back to the city ward map. If you want to display the ward names, right click on the icon in the menu section and select the “Properties” option.

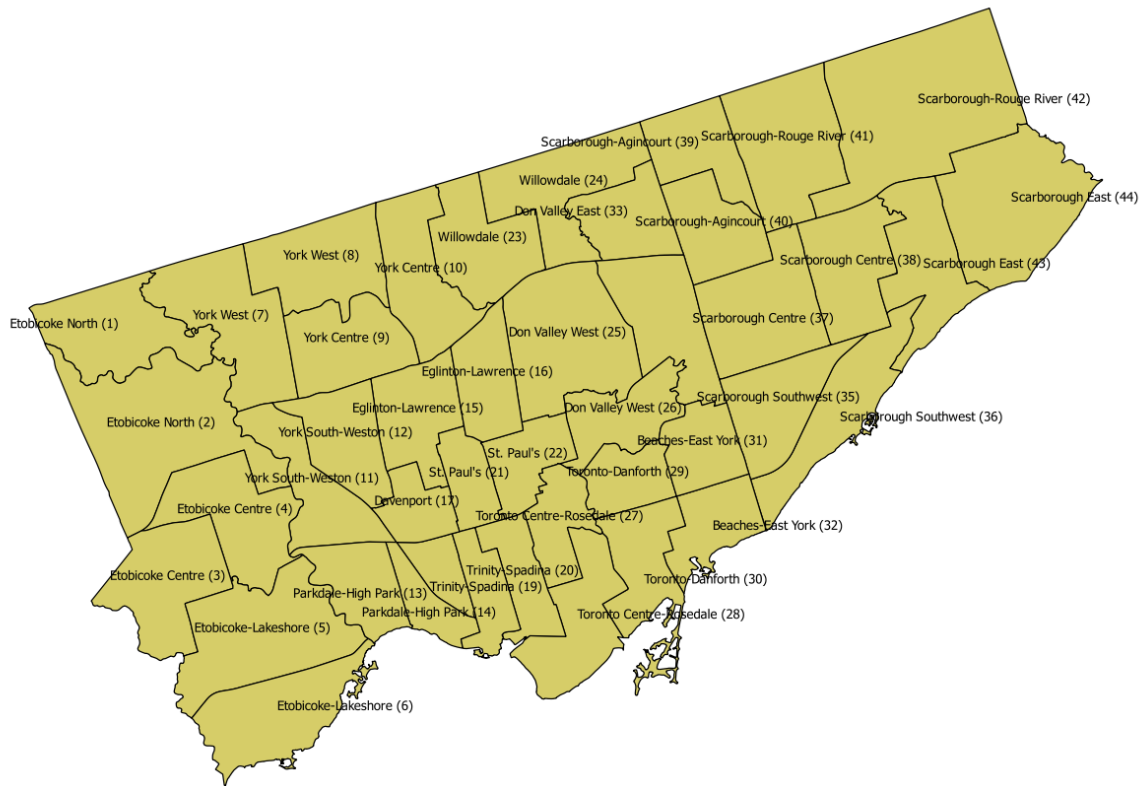


Select the “Labels” icon. Check the box to the left of the “Label this layer with” title. Select the “NAME” column title from the drop-down menu. Your screen should resemble the image below.

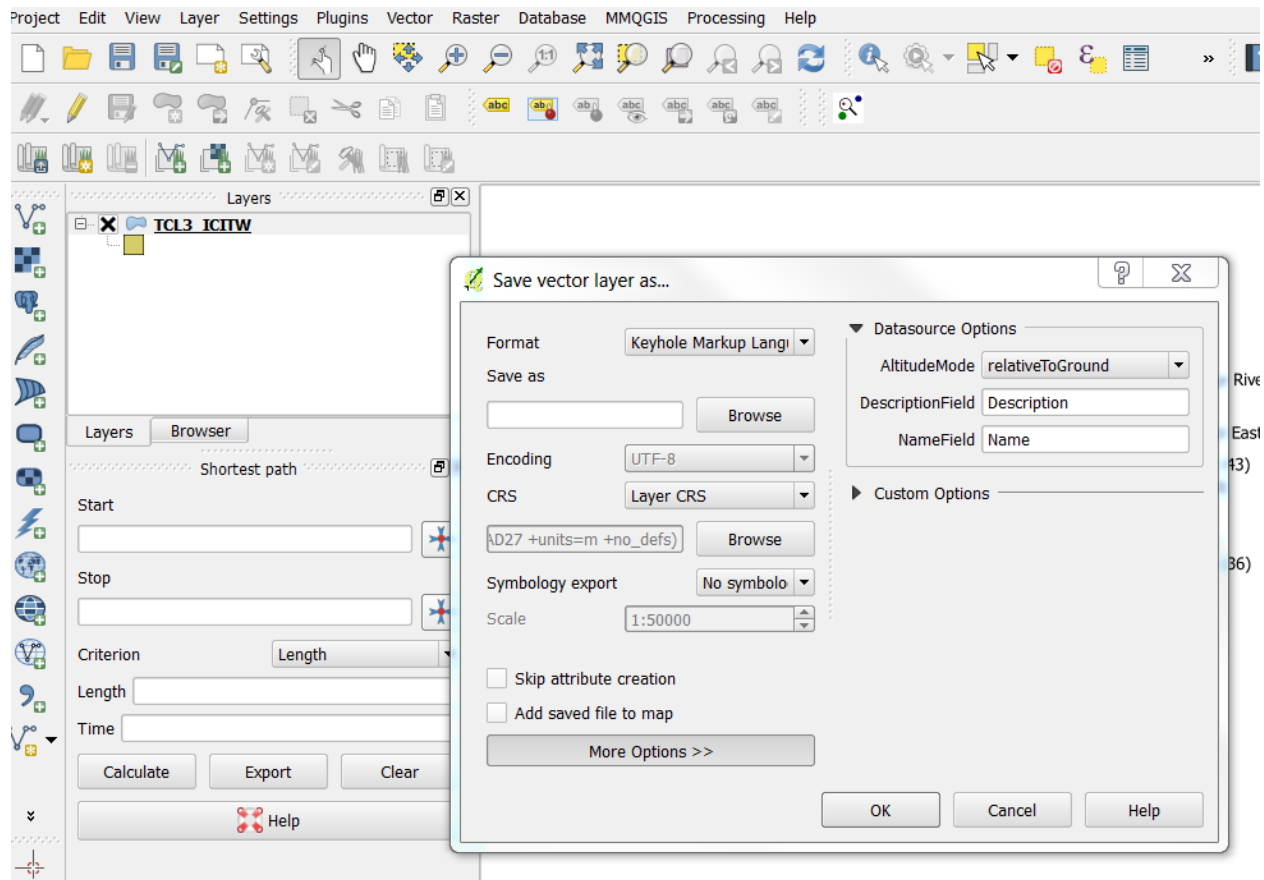


Select the "Apply" and then the "OK" tabs.



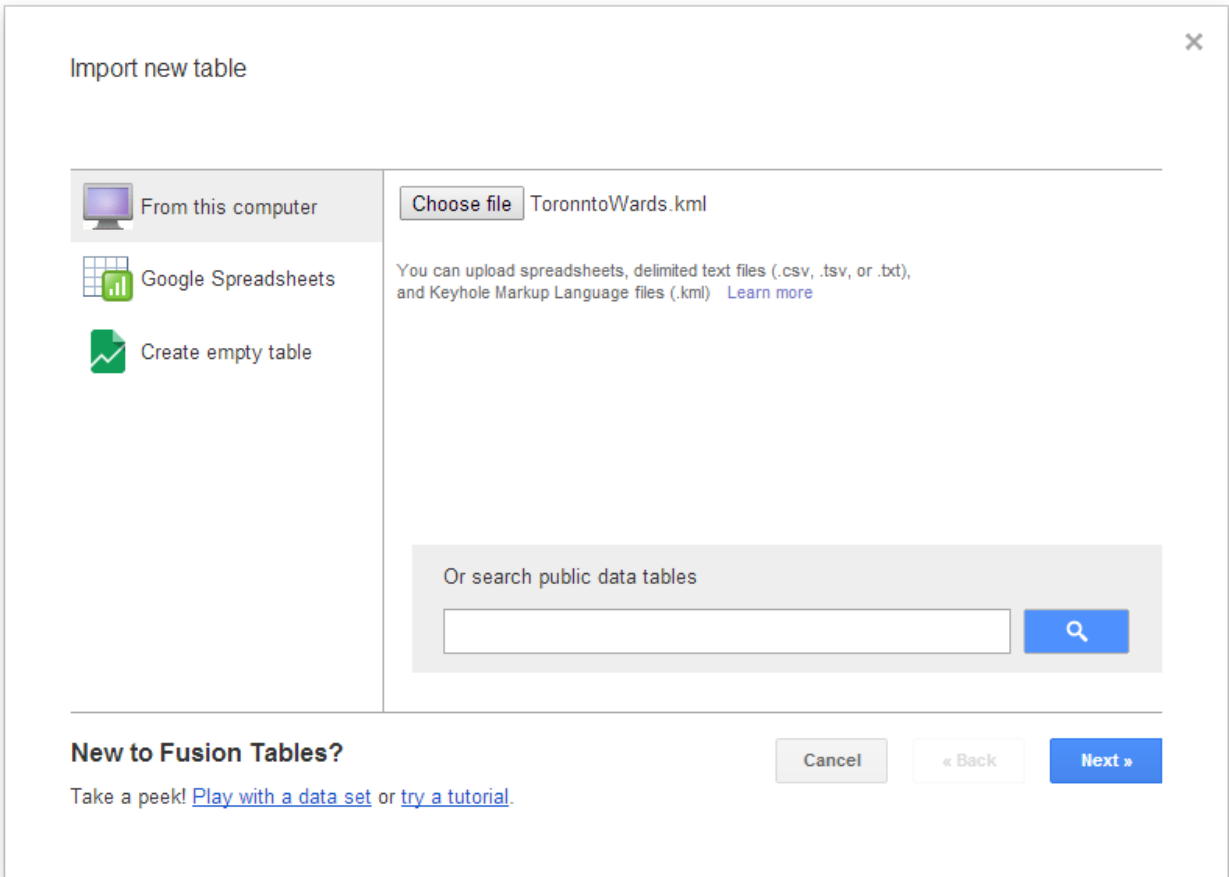


While this file looks fine in Qgis, it won't work in Fusion Tables in its present form. We must convert it to a KML file. To do so, go to the "Layer" section in the menu at the top, choose the "Save As" option to produce a dialog box like the one below.



The “Format” is Keyhole Markup Language (KML). Use the “Browse” tab to find the folder where you want to save the new file. Once you’ve done so, save the Qgis file, and close it.

Open the Fusion Tables icon on you Google Drive, and browse for the new “TorontoWards” KML file.



Upload the file. There is no need to change the format of columns like we've done in previous exercises. Fusion Tables has all the geographic information it needs to map the KML file. So just select the "Map of geometry" tab at the top right.

# TorontoWards

Imported at Wed Aug 13 18:31:56 PDT 2014 from TorontoWards.kml  
Edited at 10:32 PM

david.mckie@cbc.ca

Share

File Edit Tools Help

Rows 1

Cards 1

Map of geometry

Filter No filters applied

Saved

1-44 of 44

description	name	GEO_ID	CREATE_ID	SCODE_NAME	LCODE_NAME	TYPE_DESC	TYPE_CODE	OBJECTID	SHAPE_AREA
	Scarborough-Rouge River (41)	14630026	63519	41	EA41	Ward	CITW	1	0.0000000000
	Scarborough East (44)	14630028	63519	44	EA44	Ward	CITW	2	0.0000000000
	Scarborough-Rouge River (42)	14630024	63519	42	EA42	Ward	CITW	3	0.0000000000
	Scarborough-Agincourt (39)	14630027	63519	39	EA39	Ward	CITW	4	0.0000000000
	Willowdale (24)	14630035	63519	24	NO24	Ward	CITW	5	0.0000000000
	Scarborough-Agincourt (40)	14630029	63519	40	EA40	Ward	CITW	6	0.0000000000
	Don Valley East (33)	14630036	63519	33	NO33	Ward	CITW	7	0.0000000000
	Willowdale (23)	14630037	63519	23	NO23	Ward	CITW	8	0.0000000000
	York West (8)	14630039	63519	08	NO08	Ward	CITW	9	0.0000000000
	Scarborough Centre (38)	14630031	63519	38	EA38	Ward	CITW	10	0.0000000000
	York West (7)	14630040	63519	07	WE07	Ward	CITW	11	0.0000000000
	Don Valley East (34)	14630041	63519	34	NO34	Ward	CITW	12	0.0000000000
	Don Valley West (25)	14630010	63519	25	NO25	Ward	CITW	13	0.0000000000

# TorontoWards

Imported at Wed Aug 13 18:31:56 PDT 2014 from TorontoWards.kml  
Edited at 10:32 PM

Share

File Edit Tools Help

Rows 1

Cards 1

Map of geometry

Filter No filters applied

Saved

44 rows

Configure map

Done

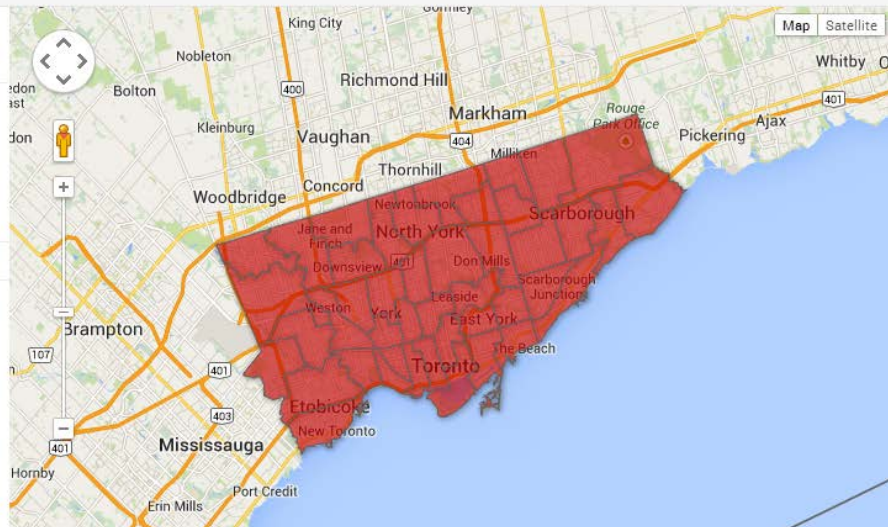
Location geometry

Feature map

Change feature styles...

Change info window...

Heatmap





Be sure to make the file “public” by clicking on the “Share” tab.

Sharing settings

Link to share (only accessible by collaborators)

<https://www.google.com/fusiontables/DataSource?docid=1z4a6Uw1pTDwjfV43HINTiv1>

Who has access

	Private - Only you can access	<a href="#">Change...</a>
	David McKie (you) david.mckie@cbc.ca	Is owner

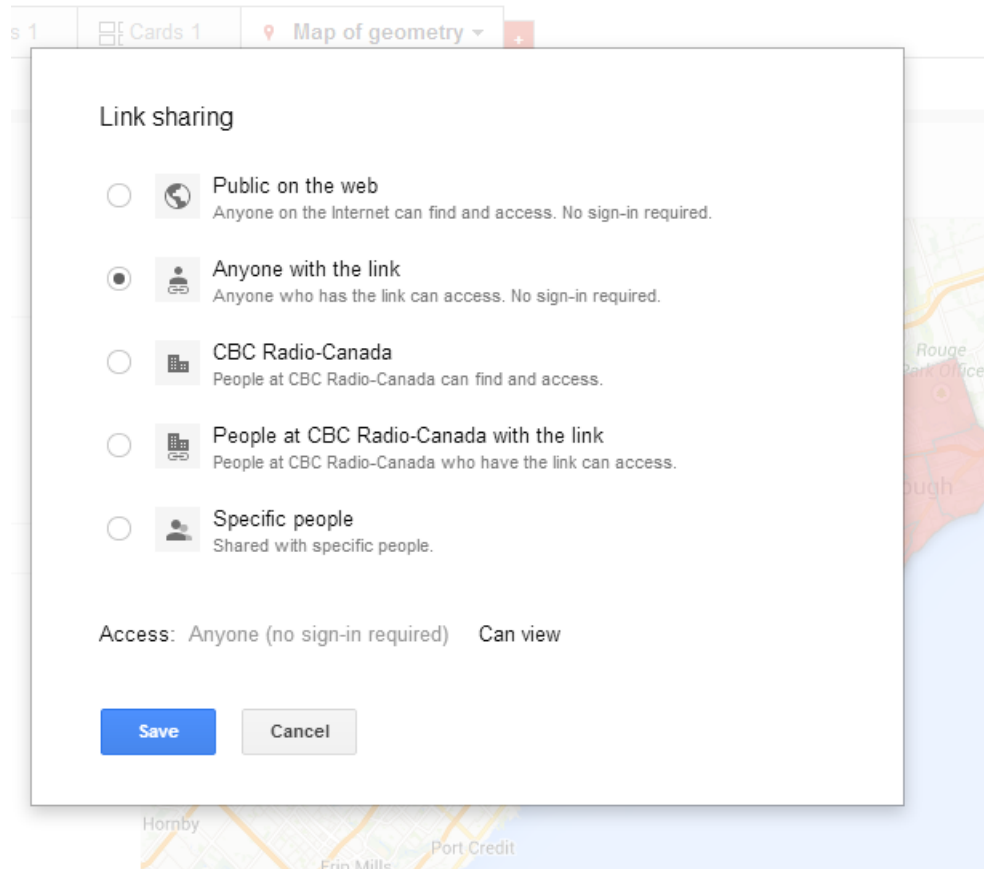
Invite people:

Enter names or email addresses...

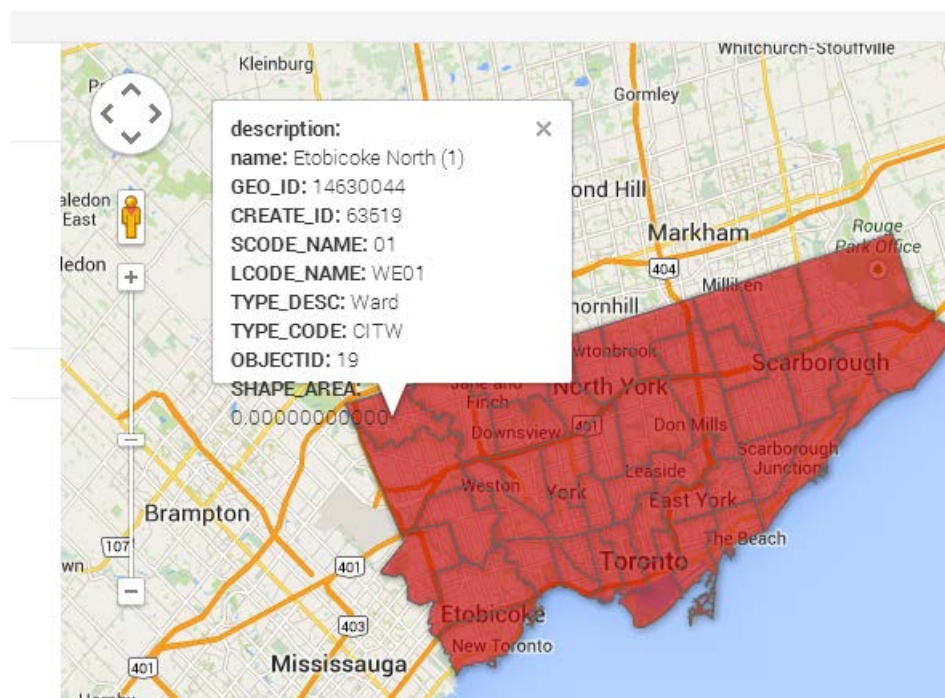
Editors will be allowed to add people and change the permissions. [\[Change\]](#)

[Done](#)

Select “Change” to make the file public by selecting one of the first two options.

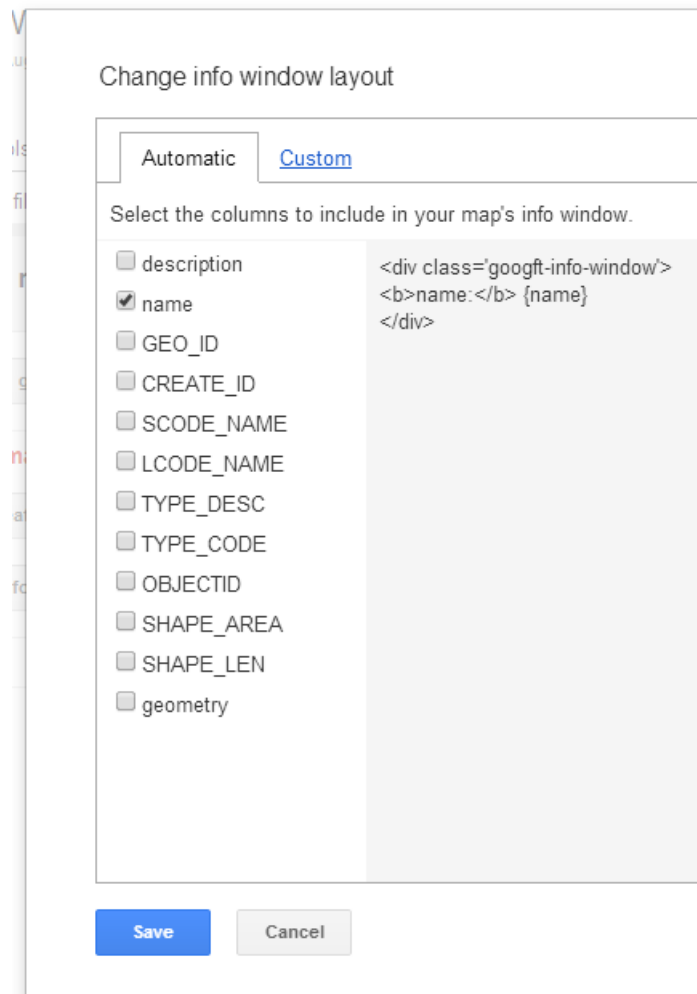


Save the setting.

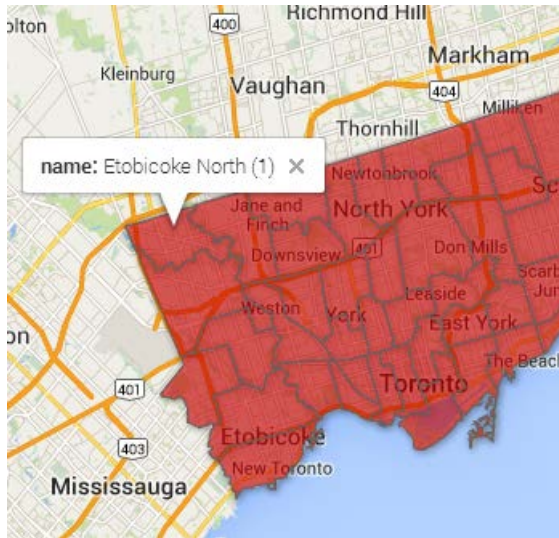


The pop-up box is too messy. Let's use the "Change info window" tab to the left to clean it up.

All we need is the "Name" of the ward.



Save the new selection.



That's better!

Now we have a Toronto ward file, and the top 20 fire hydrant ticket sites from the first tutorial. We'll use a new FusionTables tool to layer on file on top of the other, so we can see which wards contain the high ticket zones.

To do this, we'll use Fusion Table's "[Layer Builder](#)".



# FusionTablesLayer Wizard

Use this wizard with [Google Fusion Tables](#) to create maps with multiple layers, a search feature, or a custom-styled base map. Once the Preview shows your desired map, copy and paste the code from the text area below to display the map on your own website.

The HTML and Javascript generated below also get you started using [FusionTablesLayers](#) in the Google Maps API. See [code examples](#) for more functionality.

Please submit bug reports to our [Issue Tracker](#).

## 1. Add map layers

The table needs to be [accessible and downloadable](#).

Embed link

*Copy this from Tools > Publish.*

[Or, do it the old-fashioned way](#)

Add a search feature

## 2. Set map size and zoom

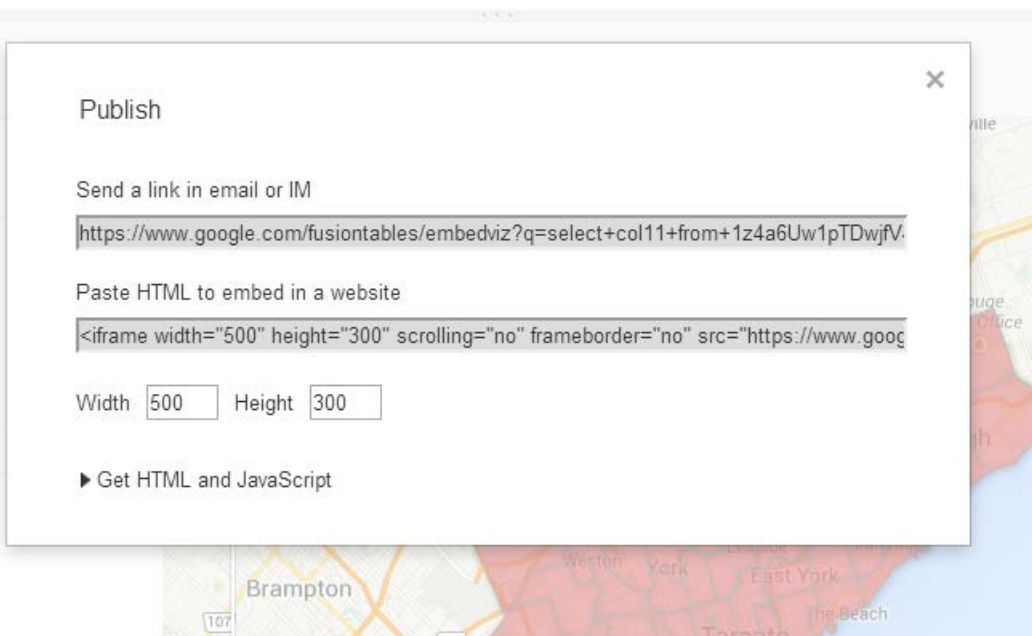
Zoom and pan the preview map as you'd like it to appear

## Preview



Let's first add the ward layer. We'll have to paste the embed code into the layer wizard.

Return to the TorontoWards file, select the "Tools" menu and then the "Publish" option.



Select and copy the “Paste HTML to embed in a website” option. You can also change the dimensions (width and height), but let’s stay with these ones for now. Close this dialog box, return to the layer wizard and paste the code into the “Embed link” option.

## 1. Add map layers

The table needs to be [accessible and downloadable](#).

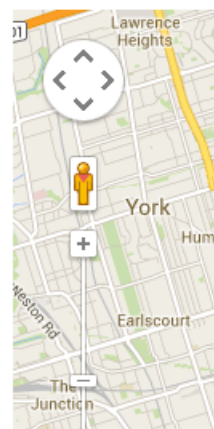
Embed link

*Copy this from Tools > Publish.*

[Or, do it the old-fashioned way](#)

Add a search feature

## Preview



Select the “Put layer on Map” tab.



## 1. Add map layers

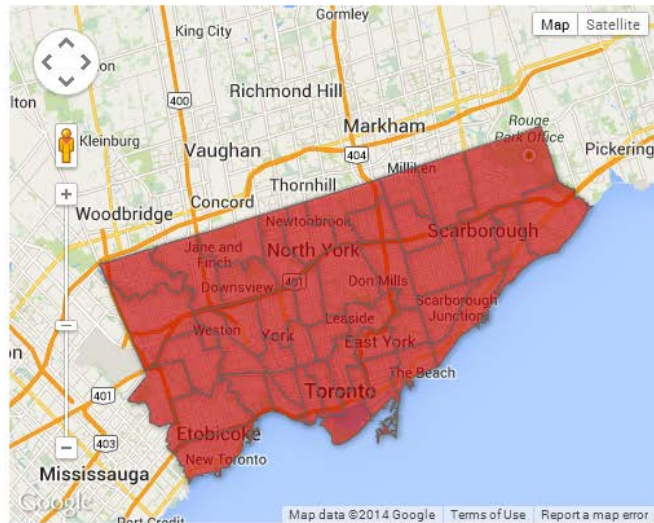
The table needs to be [accessible and downloadable](#).

Embed link	<input 500"="" height="300" src="https://www.google.com/maps/embed/v1/heatmap?data={}&amp;key=AIzaSyA..." type="text" value="&lt;iframe width="/>
<small>Copy this from Tools &gt; Publish.</small>	
	<a href="#">Or, do it the old-fashioned way</a>
	<input type="button" value="Remove layer"/>
Add a search feature	<input type="text" value="--Select--"/>

---

Embed link	<input 500"="" height="300" src="https://www.google.com/maps/embed/v1/heatmap?data={}&amp;key=AIzaSyA..." type="text" value="&lt;iframe width="/>
<small>Copy this from Tools &gt; Publish.</small>	
	<a href="#">Or, do it the old-fashioned way</a>
	<input type="button" value="Put layer on Map"/>
Add a search feature	<input type="text" value="--Select--"/>

## Preview



## Put the layer on the map.

The HTML and javascript generated below also get you started using [Fusion Tables Layers](#) in the Google Maps API. See [code examples](#) for more functionality.

Please submit bug reports to our [Issue Tracker](#).

## 1. Add map layers

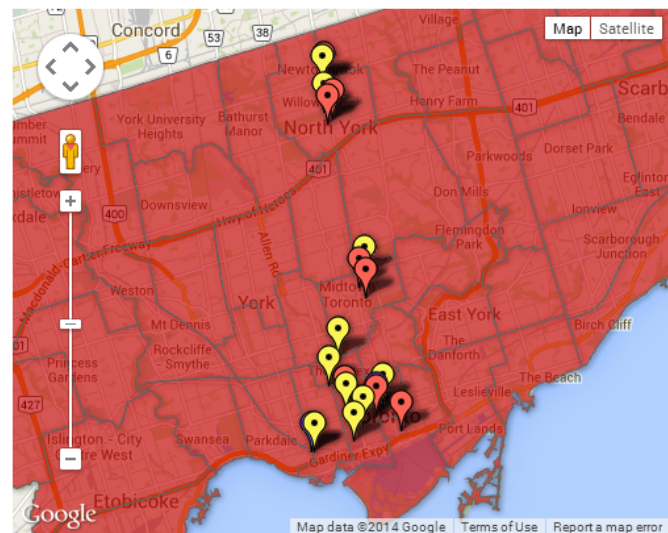
The table needs to be [accessible and downloadable](#).

Embed link	<input 500"="" height="300" src="https://www.google.com/maps/embed/v1/heatmap?data={}&amp;key=AIzaSyA..." type="text" value="&lt;iframe width="/>
<small>Copy this from Tools &gt; Publish.</small>	
	<a href="#">Or, do it the old-fashioned way</a>
	<input type="button" value="Remove layer"/>
Add a search feature	<input type="text" value="--Select--"/>

---

Embed link	<input 500"="" height="300" src="https://www.google.com/maps/embed/v1/heatmap?data={}&amp;key=AIzaSyA..." type="text" value="&lt;iframe width="/>
<small>Copy this from Tools &gt; Publish.</small>	
	<a href="#">Or, do it the old-fashioned way</a>
	<input type="button" value="Remove layer"/>
Add a search feature	<input type="text" value="--Select--"/>

## Preview



Now let's see how we can use the layer wizard's "Add a search feature" function, to obtain a limited filter function for the hydrant layer. Choose the "Select-based search" from the drop-down menu, and then the "Hydrant-Count" column from the "Column to query" option below.

Add a search feature

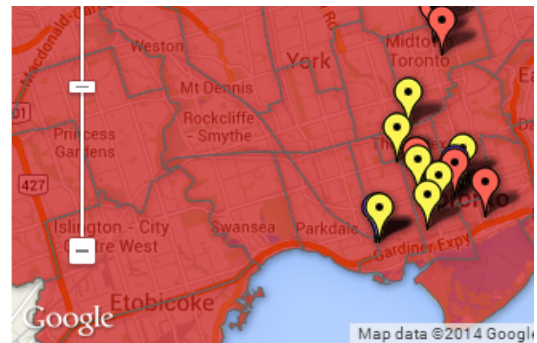
Embed link   
*Copy this from Tools > Publish.*

[Or, do it the old-fashioned way](#)

Add a search feature

**Select Label:**

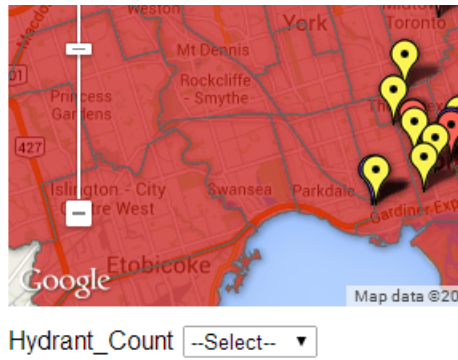
Column to query:



Select the "Add Search" tab.

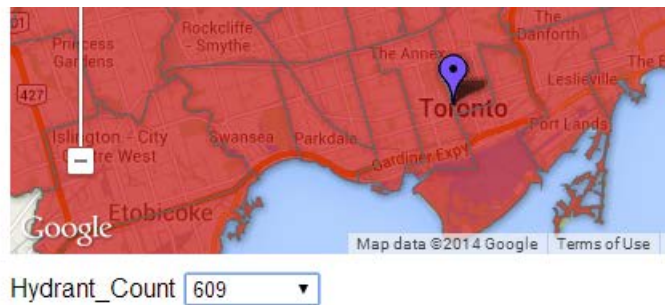


[Or, do it the old-fashioned way](#)



Now we can select a number. Choose the highest one.

[Or, do it the old-fashioned way](#)



We can also add a search feature to the ward layer by using the same steps. In the “Column to query” drop-down menu, select the ward “name”.

Select the “Add Search” tab to produce a drop-down menu below “Hydrant\_Count.”

### 1. Add map layers

The table needs to be [accessible and downloadable](#).

Embed link   
*Copy this from Tools > Publish.*

[Or, do it the old-fashioned way](#)

Add a search feature

Select Label:

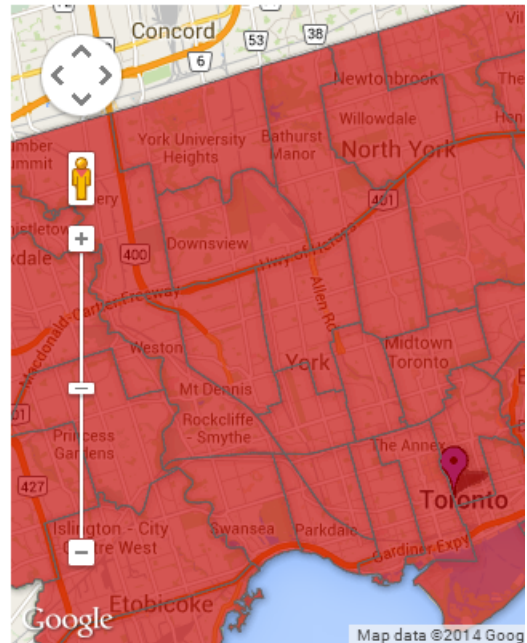
Column to query:

---

Embed link   
*Copy this from Tools > Publish.*

[Or, do it the old-fashioned way](#)

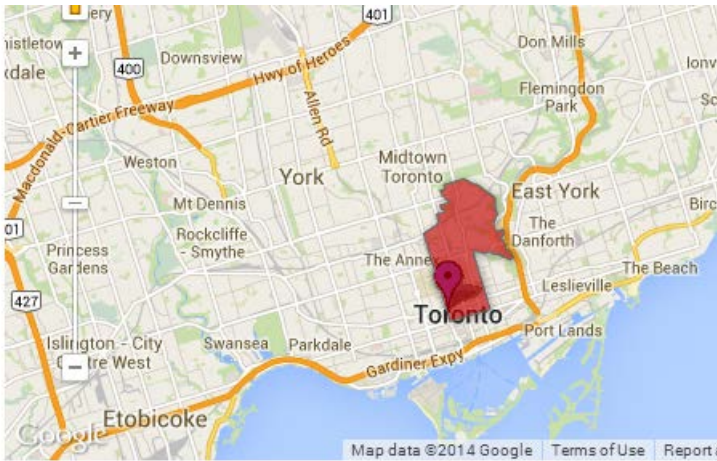
### Preview



Hydrant\_Count

name

Select Toronto Centre-Rosedale (27), the ward with the highest number of hydrant infractions.

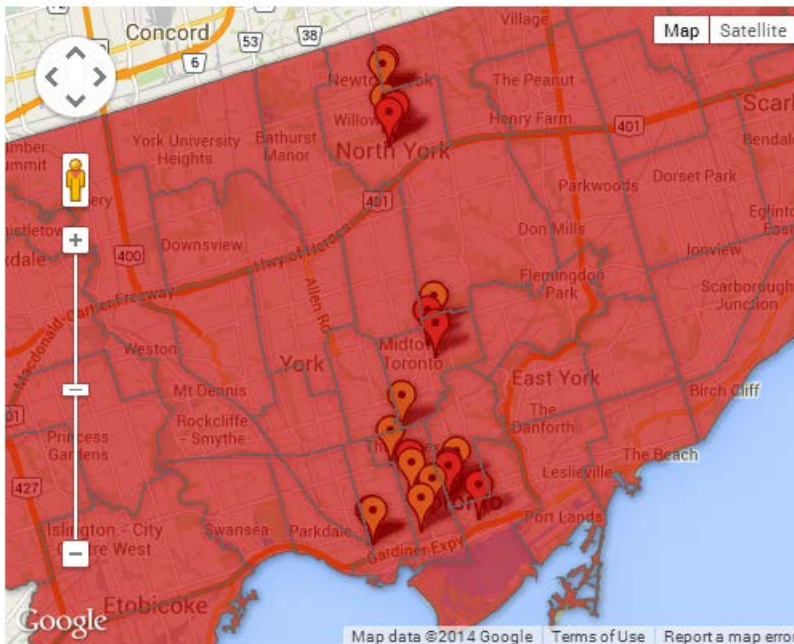


Hydrant\_Count 609 ▼

name Toronto Centre-Rosedale (27) ▼

To get back to the original layers, choose the “Select” option in both drop-down menus.

### Preview

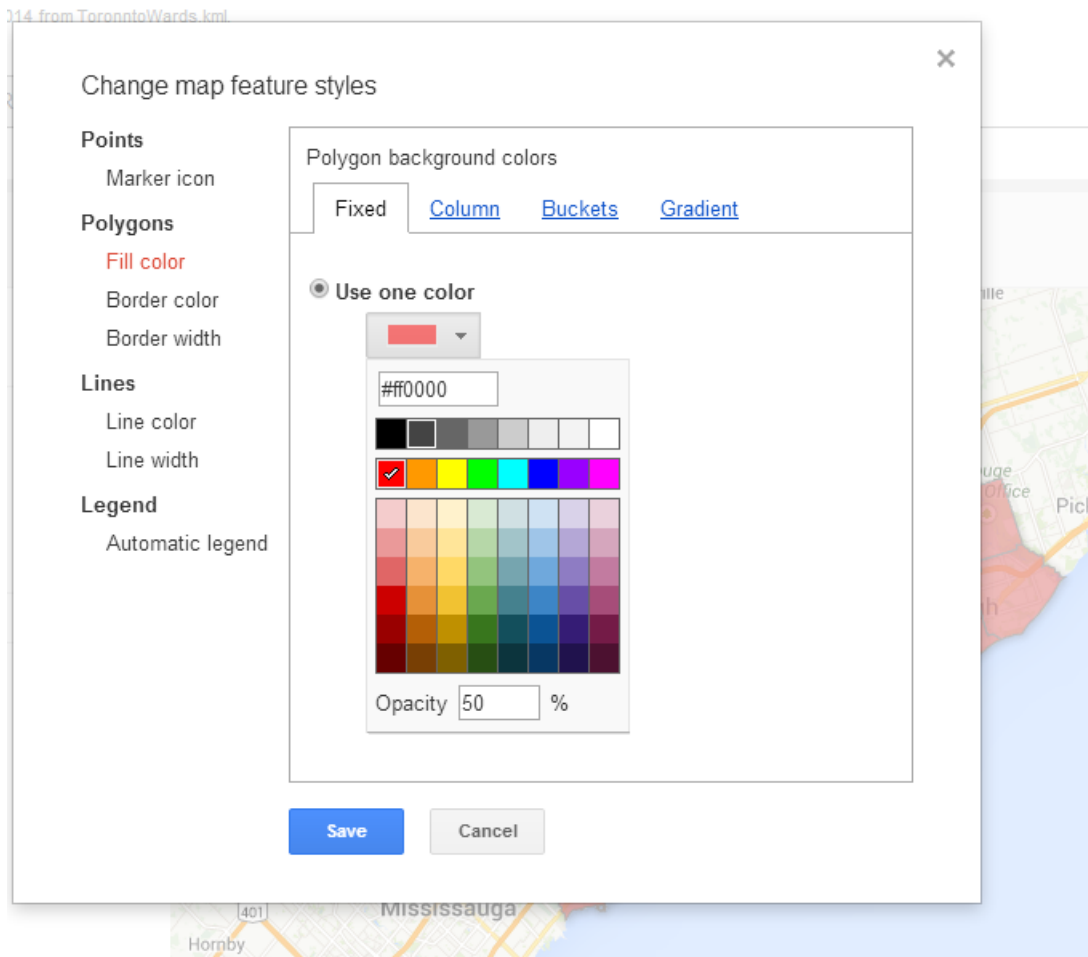


Hydrant\_Count --Select-- ▼

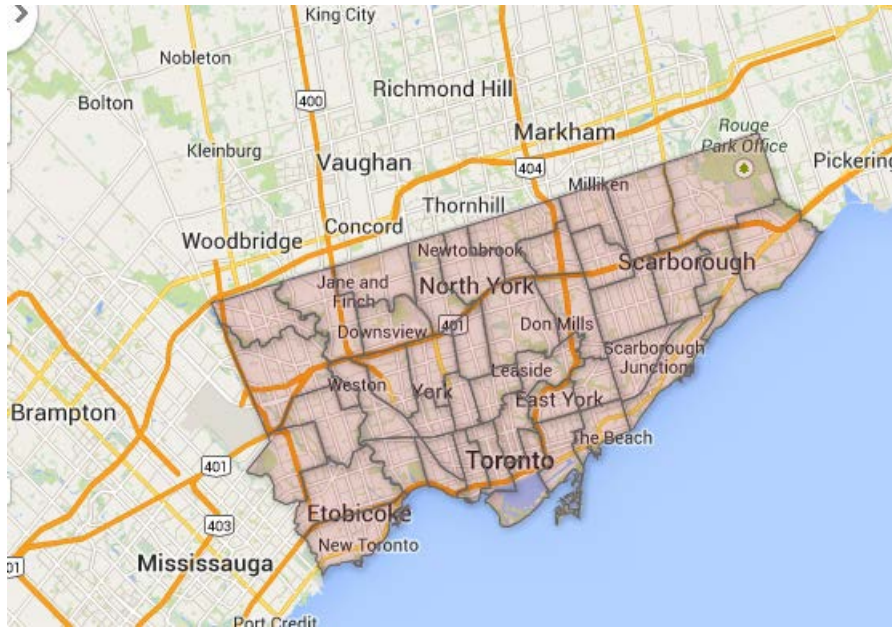
name --Select-- ▼



Admittedly, the colour of the TorontoWard layer makes it difficult to see hydrant markers. If you wanted to change the TorontoWard file colour, it would probably be easiest for novices to return to the original file, and select the “Change map features styles” tab.



You can either change the colour to something lighter, or the “Opacity” to a value less than 50%. Let’s choose 10 percent.



If this is the version you wanted to use, you can remove the old ward layer, add this one, and follow the steps we just learned.

But let's stick with the version we have because we're almost done.

You may notice the FusionTables wizard produce a legend for the hydrant layer. You'll have to account for this when describing this map in your story.

There is also no way to save this file (though that may be coming soon). So we have to copy the embed code that you can find by scrolling to the bottom.

## 4. Your HTML

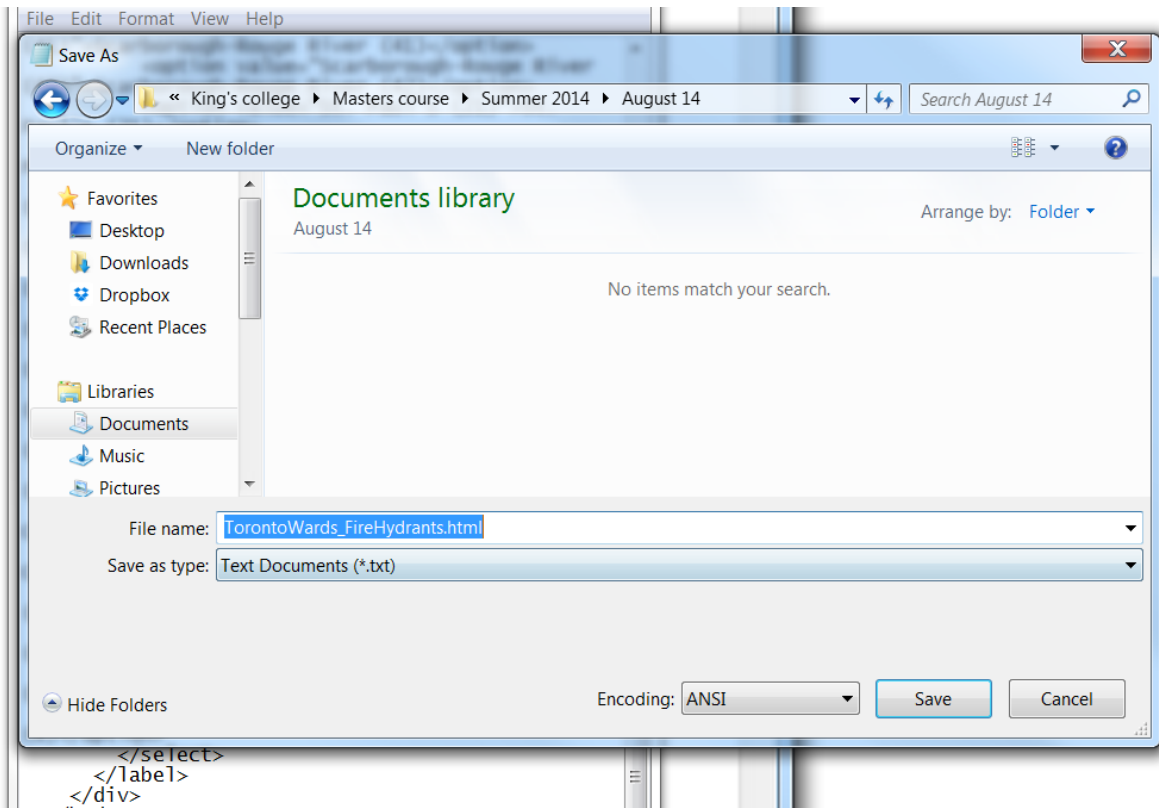
This code uses the Google Maps JavaScript API v3, which has its own [usage limits](#) and [TOS](#). For background, see the [Google Geo Developers blog](#).

```
<!DOCTYPE html>
<html>
  <head>
    <style>
      #map-canvas { width:500px; height:400px; }
      .layer-wizard-search-label { font-family: sans-serif };
    </style>
    <script type="text/javascript"
      src="http://maps.google.com/maps/api/js?sensor=false">
    </script>
    <script type="text/javascript">
      var map;
      var layer_1;
      var layer_0;
      function initialize() {
        map = new google.maps.Map(document.getElementById('map-canvas'), {
          center: new google.maps.LatLng(43.71880988161121, -79.41363621191414),
          zoom: 11,
          mapTypeId: google.maps.MapTypeId.ROADMAP
        });
        layer_1 = new google.maps.FusionTablesLayer({
          query: {
            select: "col3",
            from: "1iiVe7Ah111130dXwrnn5-ZQx8rc4kxESA6oeRtBq"
          },
          map: map,
          styleId: 2,
          templateId: 2
        });
        layer_0 = new google.maps.FusionTablesLayer({
          query: {
            select: "col11",
            from: "1z4a6Uw1pTDwifV43HINtivilDtz9LqZdJEqJvfqGk"
          }
        });
      }
    </script>
  </head>
  <body>
    <div id="map-canvas">
    </div>
  </body>
</html>
```

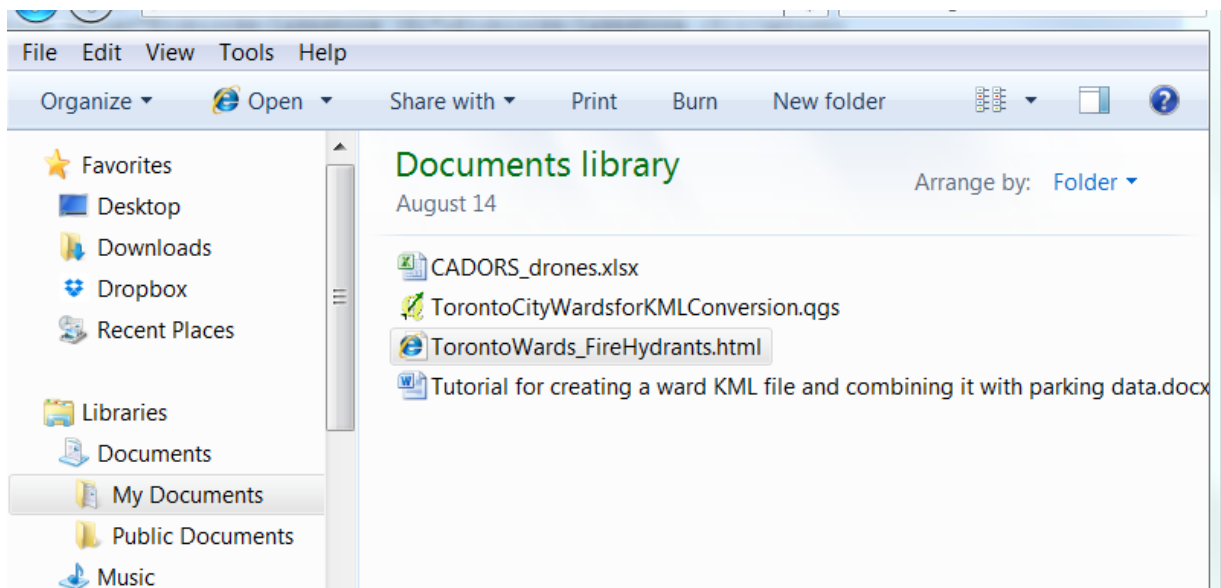
Select and copy the embed code. Open a Notepad file.

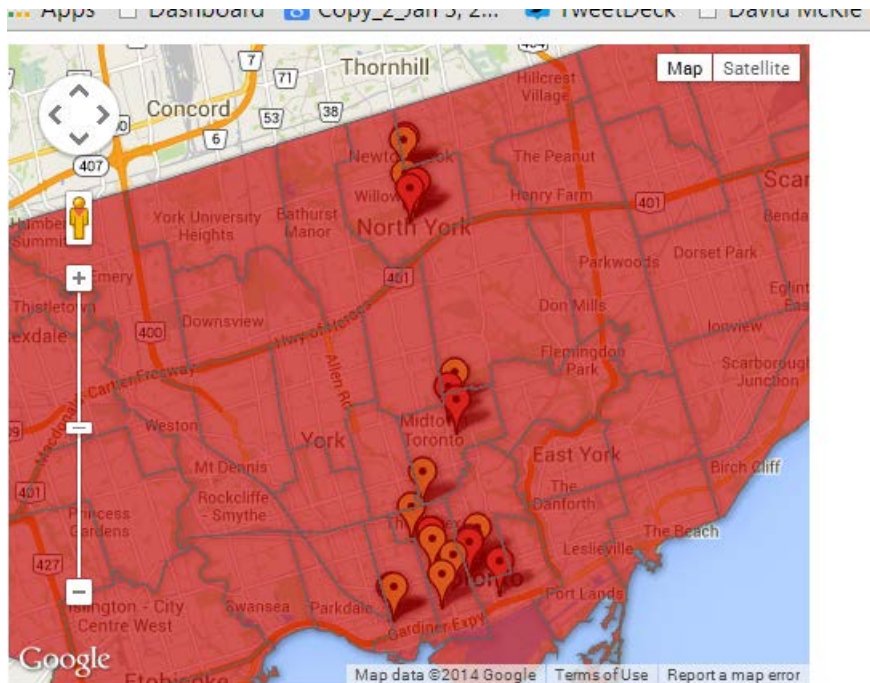


Paste the embed code, name and save the file with an “html” extension.



Save the file and open it in the Chrome browser.





You've done it! If you were writing a story about fire hydrants that have become magnets for tickets, you could embed this map into your online story and explain how people can use the search functions.

