


Chapter 6

Building Maps with Google Fusion Tables



Summary: The Google Fusion Tables is described as “experimental”, which means that it always in beta format. Still, as we saw in Chapter 6, the application provides an excellent way of displaying data in a map, either by plotting the geographic coordinates such as longitude and latitude that are part of the dataset that you’re uploading, or by linking to a KML file, the native format for Google Maps and an open standard. This tutorial will focus on building maps with Fusion Tables, as opposed to a general guide, which you’ll find in Chapter 8’s “A Guide to Google Fusion Tables Visualizations.”

There are two popular ways that many journalists use Fusion Tables. To plot points such as nursing homes or restaurants that have failed inspections, criminal offences, or federal contaminated sites. Fusion tables also allow us to combine KML files that we learned about on page 121 of Chapter 8 with tables in Excel or csv format that group the kind of information we just described in boundaries like federal or provincial ridings, municipal boundaries, countries; or states and counties in the United States. Those shapes defined by the boundaries can be assigned colours that correspond to the kind of information they contain. For instance, darker colours convey a higher concentration of frequently inspected nursing homes, restaurants, or contaminated sites that need to be cleaned up.

In this tutorial, we’ll learn how to construct both types of maps; one with points, the other with polygons. We’ll assume that you have the Fusion Table app. If you don’t, then please consult Chapter 8’s “A Guide to Google Fusion Tables Visualizations.”

What you will learn:

1. Upload and create a map using geographic coordinates.
2. Upload a KML and csv files.
3. Combine a KML file with a table in csv format.
4. Colour code your map.

Task 1: Upload and create a map using geographic coordinates.

For this task, we'll be using a table containing the list of federal contaminated sites that can be found on the Treasury Board of Canada Secretariat's [site](#).

Find Sites by Classification

The table below summarizes the number of sites in the inventory by the [National Classification System](#) of the Canadian Council of Ministers

Classification Type	Suspected	Active	Closed	Total
High Priority for Action	1	733	908	1,642
Medium Priority for Action	0	1,763	1,359	3,122
Low Priority for Action	0	1,395	932	2,327
Insufficient Information	0	109	371	480
Not a Priority for Action	0	392	2,356	2,748

The file we'll download "Active" sites in the first category, "High Priority for Action." Click the number 733, which may change depending on when the federal government department in question gets around to cleaning up the site, an expensive endeavour.

Search Results

Search Results Summary	
Criteria:	<ul style="list-style-type: none">• Classification: High Priority for Action• Limited to Active Sites Select Additional Criteria...
Sort Key:	Federal Site Identifier (ascending)
Sites Found:	733

Alternate Views

Choose an alternate view: [Map](#) [XML](#) [CSV](#) [Financials Report](#)

Select the “CSV” format.

Export Search Results to Text File

[Return to Query Results](#)

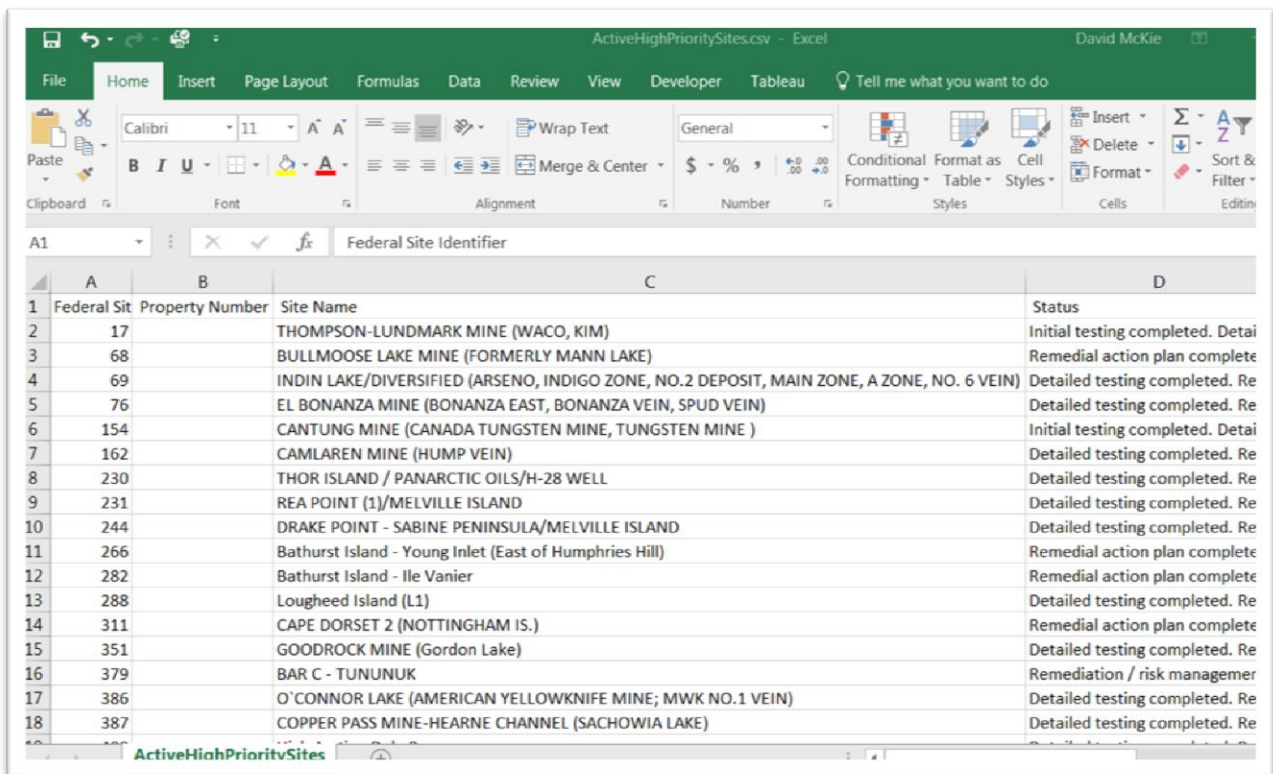
This screen allows you to export the results of your query into comma-delimited ASCII Text files, which can be imported into many software packages for you to perform further analysis of the results.

1. [Tombstone Data](#) - this file contains tombstone data records returned by your search query.
2. [Annual Data](#) - this file contains annual data records returned by your search query.
3. [Combined Data](#) - this file combines tombstone data records with corresponding annual data records.

Select “Tombstone Data”, give it a label that makes more sense than the generic one, and save the file to the folder on your hard drive that you’ll be using for this tutorial.



The file contains 30 columns and 733 rows, with each one representing a site.



A	B	C	D
Federal Sit	Property Number	Site Name	Status
17		THOMPSON-LUNDMARK MINE (WACO, KIM)	Initial testing completed. Detai
68		BULLMOOSE LAKE MINE (FORMERLY MANN LAKE)	Remedial action plan complete
69		INDIN LAKE/DIVERSIFIED (ARSENO, INDIGO ZONE, NO.2 DEPOSIT, MAIN ZONE, A ZONE, NO. 6 VEIN)	Detailed testing completed. Re
76		EL BONANZA MINE (BONANZA EAST, BONANZA VEIN, SPUD VEIN)	Detailed testing completed. Re
154		CANTUNG MINE (CANADA TUNGSTEN MINE, TUNGSTEN MINE)	Initial testing completed. Detai
162		CAMLAREN MINE (HUMP VEIN)	Detailed testing completed. Re
230		THOR ISLAND / PANARCTIC OILS/H-28 WELL	Detailed testing completed. Re
231		REA POINT (1)/MELVILLE ISLAND	Detailed testing completed. Re
244		DRAKE POINT - SABINE PENINSULA/MELVILLE ISLAND	Detailed testing completed. Re
266		Bathurst Island - Young Inlet (East of Humphries Hill)	Remedial action plan complete
282		Bathurst Island - Ile Vanier	Remedial action plan complete
288		Lougheed Island (L1)	Detailed testing completed. Re
311		CAPE DORSET 2 (NOTTINGHAM IS.)	Remedial action plan complete
351		GOODROCK MINE (Gordon Lake)	Detailed testing completed. Re
379		BAR C - TUNUNUK	Remediation / risk manager
386		O'CONNOR LAKE (AMERICAN YELLOWKNIFE MINE; MWK NO.1 VEIN)	Detailed testing completed. Re
387		COPPER PASS MINE-HEARNE CHANNEL (SACHOWIA LAKE)	Detailed testing completed. Re

As we learned in Chapter 8, it's best to keep things simple when mapping.

Scroll to the far right, and you'll see the longitude and latitude coordinates that Fusion Tables will use to place the sites.

AB	AC	AD	AE
Latitude	Longitude	Coordinate Reference System	
62.60667	-113.465556	NAD83 (EPSG4269)	
62.34056	-112.746389	NAD83 (EPSG4269)	
64.27361	-115.204722	NAD83 (EPSG4269)	
66.00414	-118.073309	NAD83 (EPSG4269)	
61.96278	-128.216111	NAD83 (EPSG4269)	
62.98472	-113.204167	NAD83 (EPSG4269)	
78.12368	-103.177136	NAD83 (EPSG4269)	
75.36099	-105.72743	NAD83 (EPSG4269)	
67.20528	-118.591667	NAD83 (EPSG4269)	
76.33841	-98.694458	NAD83 (EPSG4269)	
76.13333	-104.033333	NAD83 (EPSG4269)	
77.34953	-105.30697	NAD83 (EPSG4269)	
63.11197	-77.938633	NAD83 (EPSG4269)	
63.03139	-113.135	NAD83 (EPSG4269)	
69.00691	-134.672628	NAD83 (EPSG4269)	
61.325	-111.792222	NAD83 (EPSG4269)	

Column AD even contains the Coordinate Reference System, which Chapter 7 covers in detail.

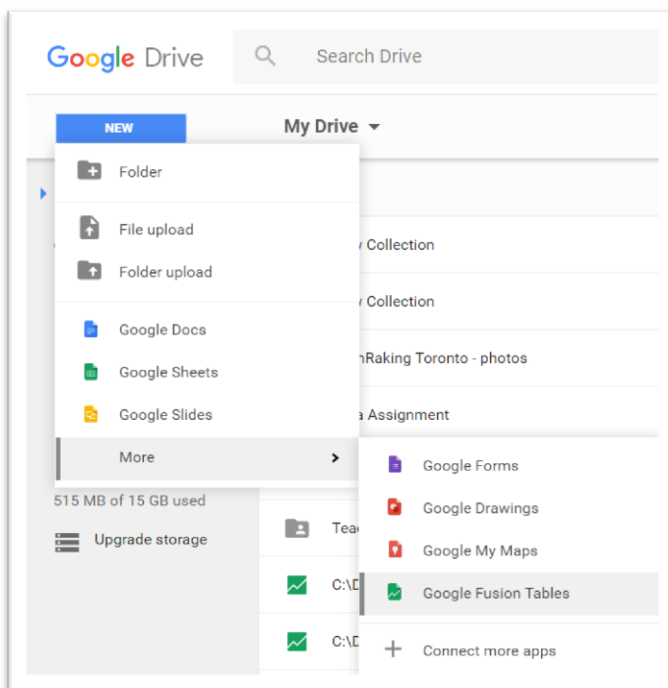
Save a copy of this table as an Excel file, which will allow us to do some basic analysis that will determine what we upload.

As we explained in Chapters 6 and 8, the key to effective visualizations like maps is to keep things simple. In this case, we have a table that contains information about the contaminated sites for which many federal government departments are responsible. And the sites are in various forms of clean up. We could use a Fusion Table to group the departments and count the number of contaminated sites they contain. If you can't remember how to construct one, please refer to Chapter 4's pivot table tutorial.

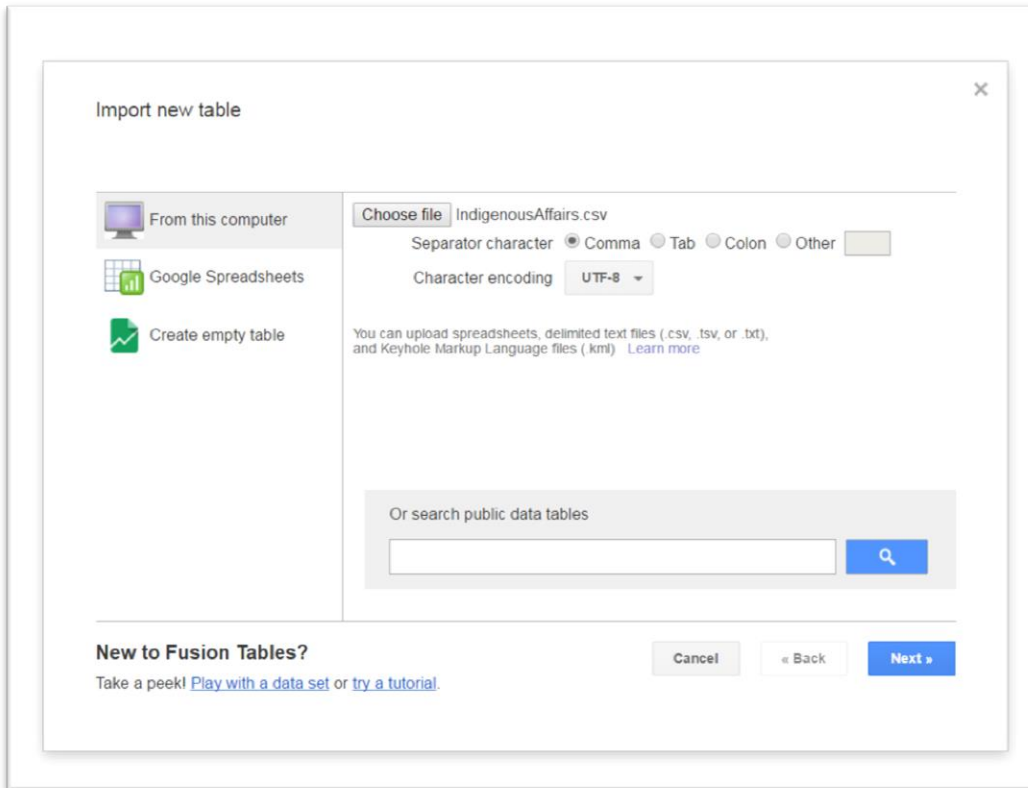
Row Labels	Count of Federal Site Identifier
Indigenous and Northern Affairs Canada (Indian and Inuit Affairs Program)	207
Fisheries and Oceans Canada	144
National Defence	111
Indigenous and Northern Affairs Canada (Northern Affairs Program)	89
Transport Canada	57
Public Services and Procurement Canada	55
Parks Canada Agency	30
National Capital Commission	11
Environment and Climate Change Canada	9
Correctional Service of Canada	6
Royal Canadian Mounted Police	5
Atomic Energy of Canada Limited	3
The Jacques-Cartier and Champlain Bridges Incorporated	2
National Research Council	2
Health Canada	1

We can see that Indigenous and Northern Affairs Canada has the highest number of sites, many of which are reserves. So we might choose to return to our table, select those sites, paste them into a new file, save it as a csv, which we'll upload to Fusion Tables. To continue the tutorial, you can also upload the new csv file by clicking [here](#).

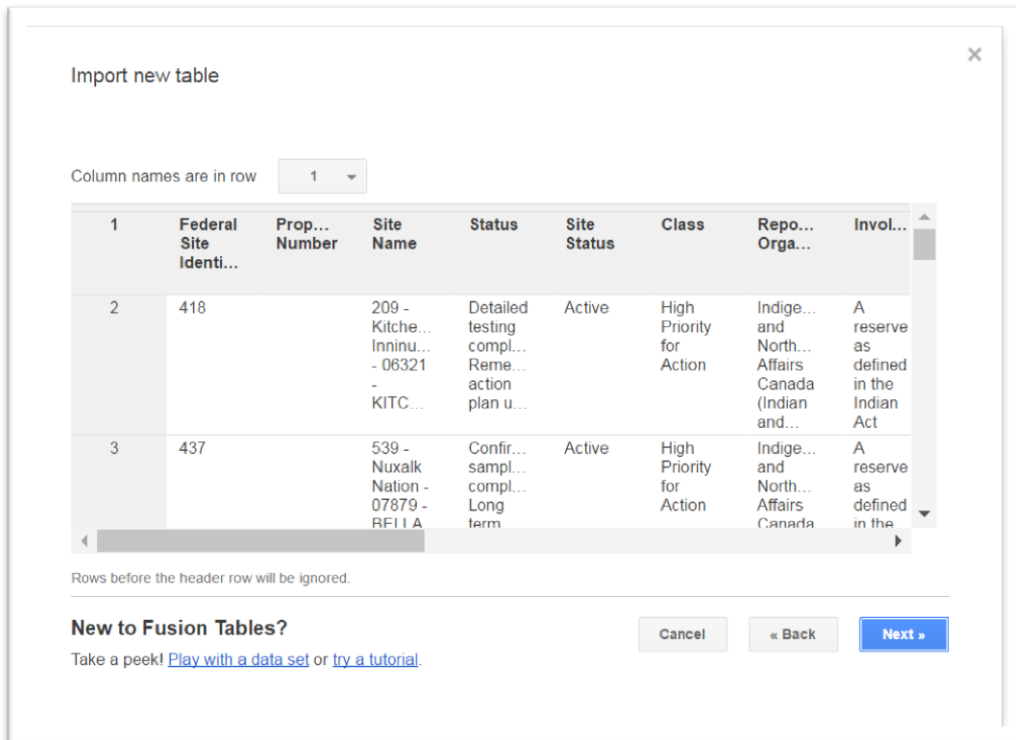
Now go to your Google Drive, and select your Fusion Table App.



Select the Fusion Tables app, and browse for your csv file.



Select the “Next” tab.



If your table doesn't begin at the first row, you use the tab just above the table to select the correct row that contains the column labels. This is okay. So select the "Next" tab.

✕

Import new table

Table name

Allow export [?](#)

Attribute data to [?](#)

Attribution page link

Description

For example, what would you like to remember about this table in a year?

New to Fusion Tables? Cancel

Take a peek! [Play with a data set](#) or [try a tutorial](#).

Here we have the table name, which can change. As well, we can add to the generic description. For instance, information about the table that you might want to share. The generic information is fine. So select "Finish."

IndigenousAffairs
Imported at Wed Oct 26 20:47:11 PDT 2016 from IndigenousAffairs.csv.
 Edited at 23:47

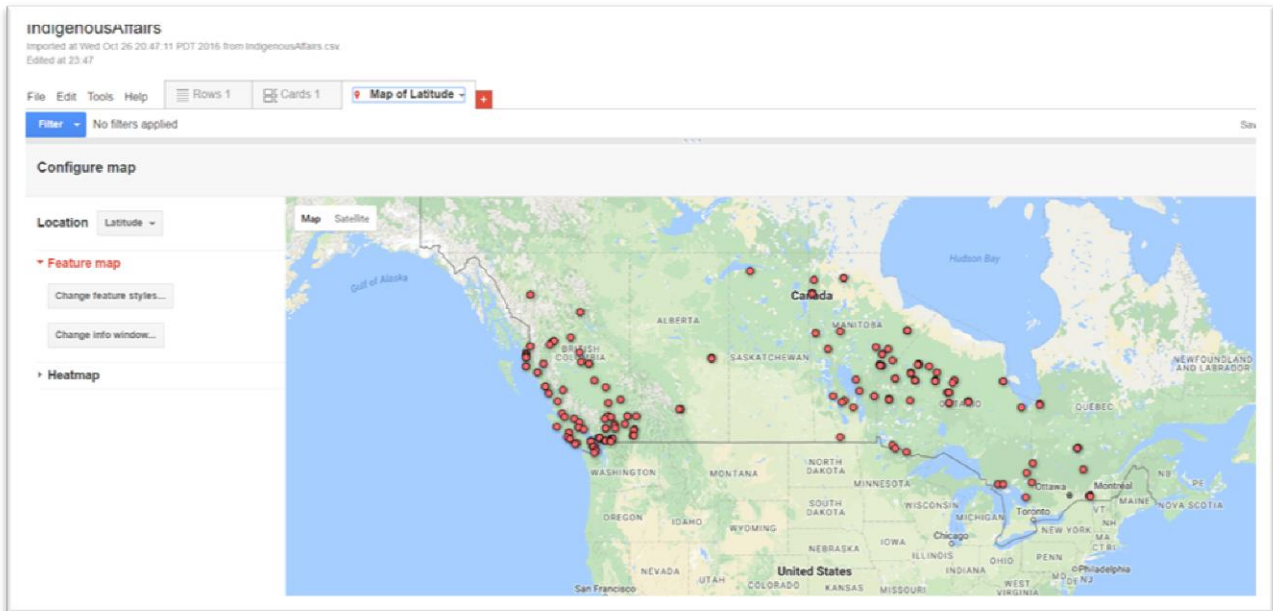
File Edit Tools Help Rows 1

No filters applied

1-100 of 207

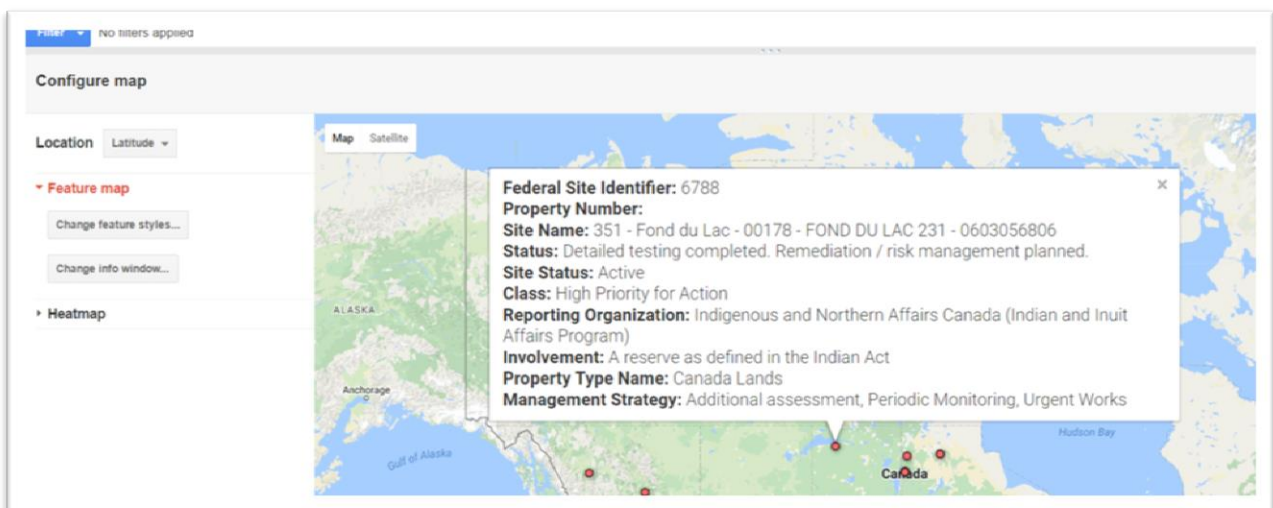
Federal Si...	Proper...	Site Name	Status	Site Status	Class	Reporting Organization	Involvement	Property Type Name	Management Strategy	Addition...	Action Plan	Non-Fe
418		209 - Kitchenuhma... Innuwug - 06321 - KITCHENUH... AAKI 84 - 0402307405	Detailed testing completed. Remedial action plan under development.	Active	High Priority for Action	Indigenous and Northern Affairs Canada (Indian and Inuit Affairs Program)	A reserve as defined in the Indian Act	Canada Lands	Additional assessment, Remediation			
437		539 - Nuxalk Nation - 07879 - BELLA COOLA 1 - 7000096897	Confirmatory sampling completed. Long term monitoring underway.	Active	High Priority for Action	Indigenous and Northern Affairs Canada (Indian and Inuit Affairs Program)	A reserve as defined in the Indian Act	Canada Lands	Other, Remediation			
456		239 - Neaskanlaga First Nation - 06355 - LANSDOWNE HOUSE INDIAN SETTLEMENT - 3000028095	Detailed testing completed. Remediation / risk management planned.	Active	High Priority for Action	Indigenous and Northern Affairs Canada (Indian and Inuit Affairs Program)	A reserve as defined in the Indian Act	Canada Lands	Additional assessment			
457		183 - Eabametoong First Nation - 06296 - FORT HOPE 64 - 3000025895	Detailed testing completed. Remedial action plan under development.	Active	High Priority for Action	Indigenous and Northern Affairs Canada (Indian and Inuit Affairs Program)	A reserve as defined in the Indian Act	Canada Lands	Additional assessment			

We know that Fusion Tables has mapped the contaminated sites' longitude and latitudes because it has provided us with a "Map" tab, just to the left of the "plus" sign. Click the "Map" tab.



We can see the Fusion Table has used the geographic coordinates to place the contaminated sites onto the base map which is explained on pages 118–119 in Chapter 6.

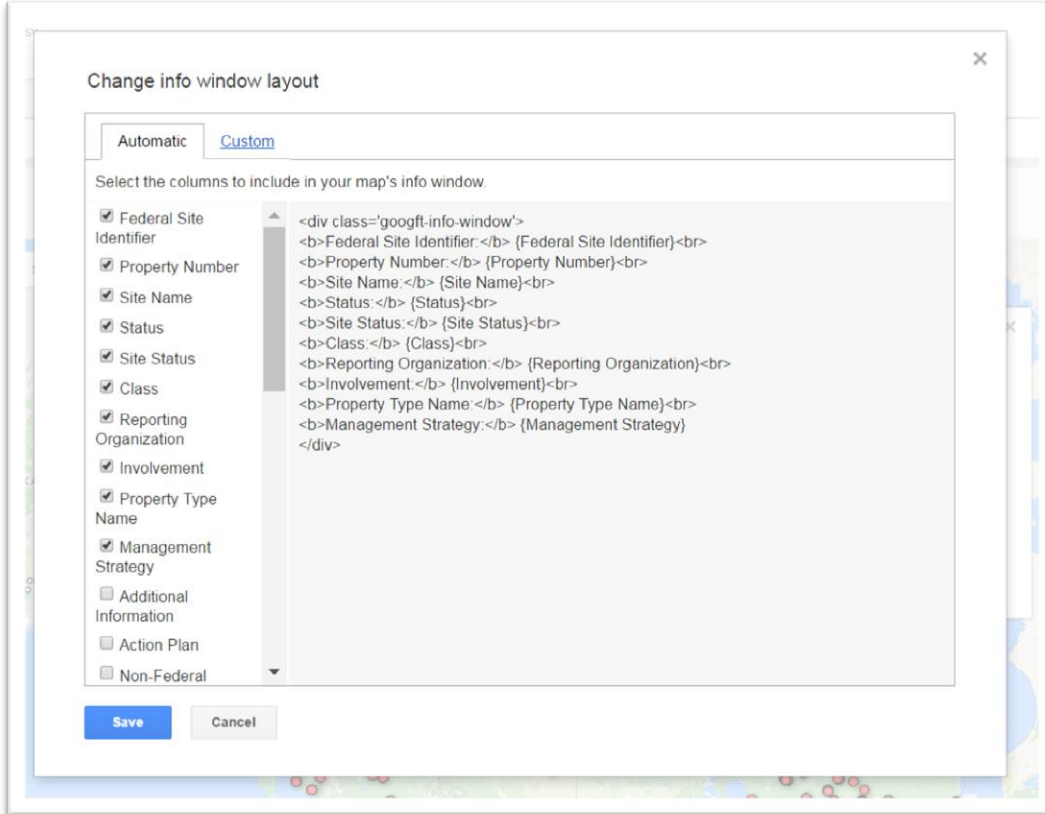
Click on one of the red dots to see the information in the pop-up box.



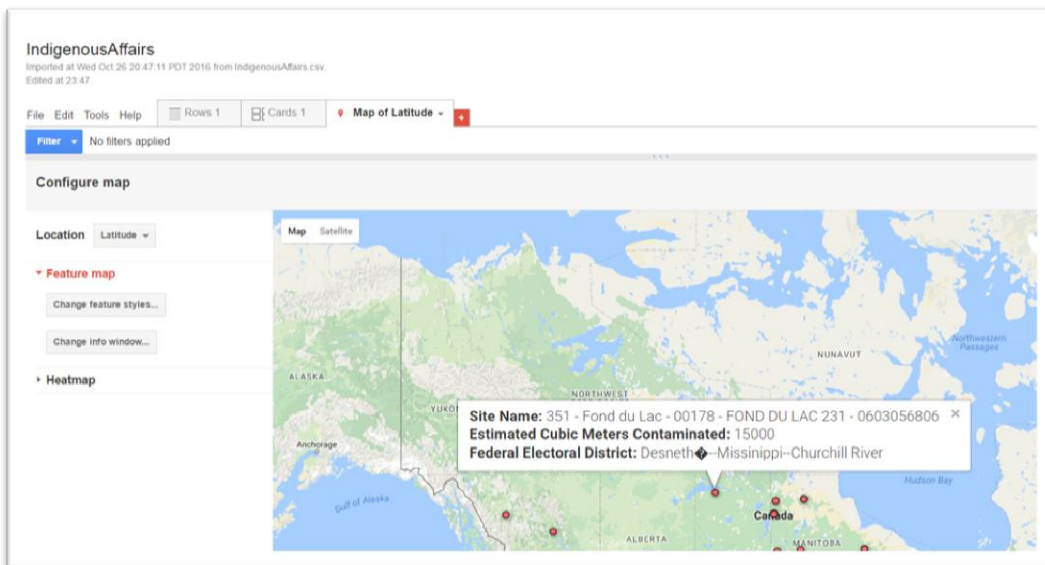
This is too much information. Remember, we've gone to the trouble of filtering the dataset for the department that owns the greatest number of high priority

contaminated sites. So we must continue to keep things simple. This means only displaying the essential information in the pop-up boxes.

To do this, click the “Change info window” tab to the left.



Because there are so many columns, Fusion Tables has only selected the first few. Select the columns you want, and de-select the rest.



That's better. Ultimately, the choice is yours. Just keep it simple. If you wanted to change the labels in your pop-up box, you could return to the "Change info window", and click the "Custom" tab, where you can use some html coding to change the titles to the left of the colons. The information to the right belongs to the original table and can not be altered.

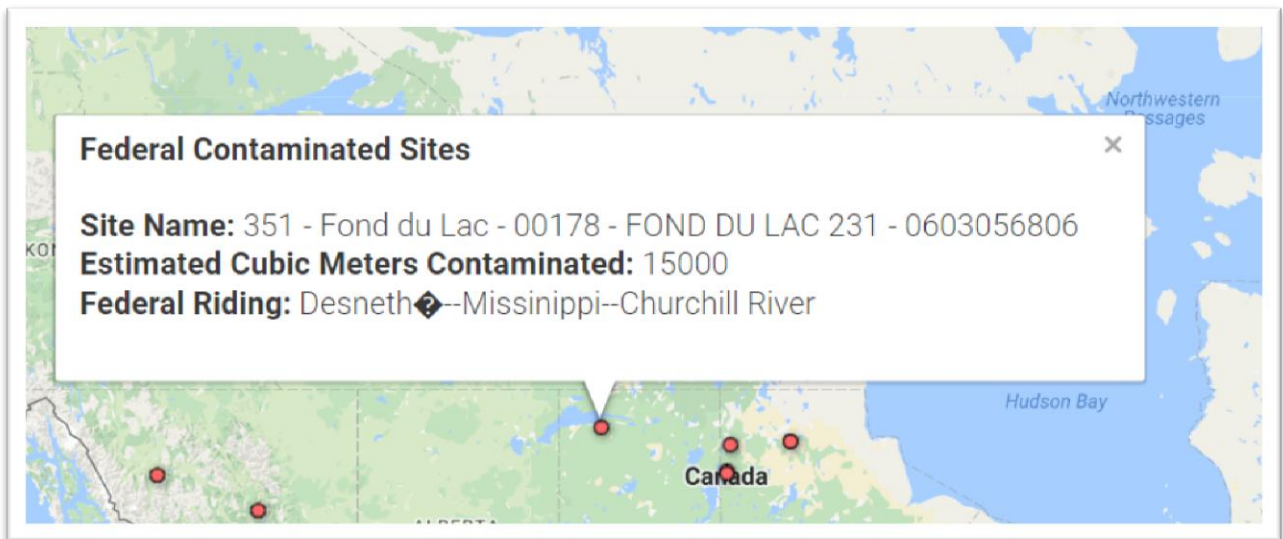
Change info window layout

[Automatic](#) **Custom**

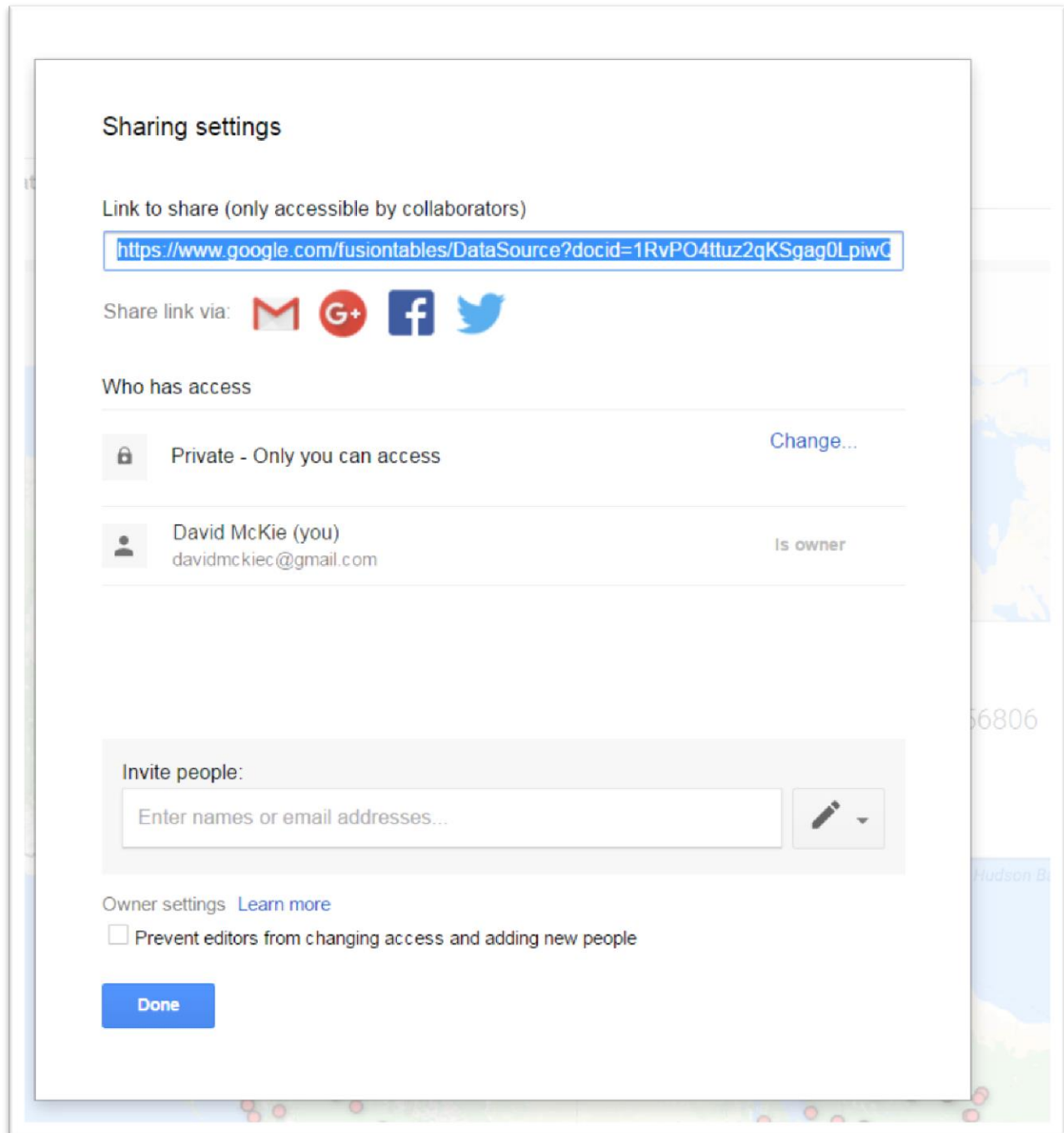
Write the HTML for your info window with column placeholders like {column name}. [Learn more](#)

Federal Site Identifier	<pre>Federal Contaminated Sites

<div class='googft-info-window'>Site Name: {Site Name}
Estimated Cubic Meters Contaminated: {Estimated Cubic Meters Contaminated}
Federal Riding: {Federal Electoral District}</div>
</pre>
Property Number	
Site Name	
Status	
Site Status	
Class	
Reporting Organization	



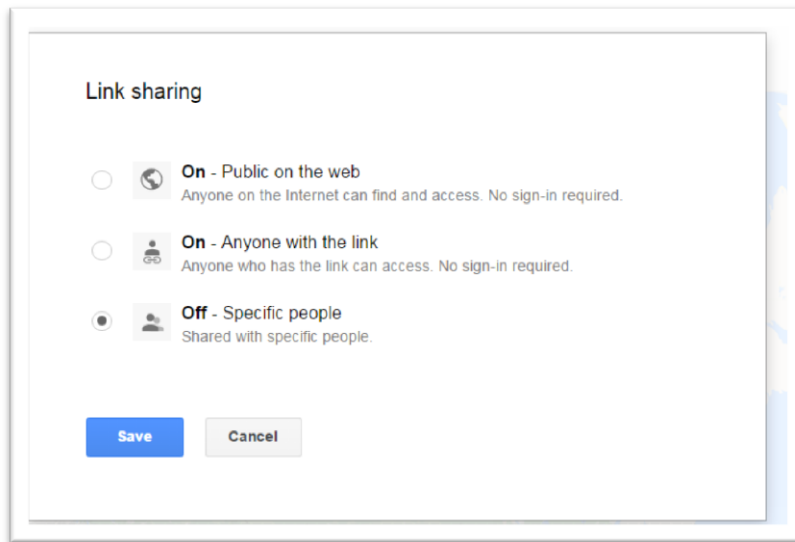
If we're happy with the result, we can share the file, but clicking on the "Share" tab at the top right, which produces a dialogue box.



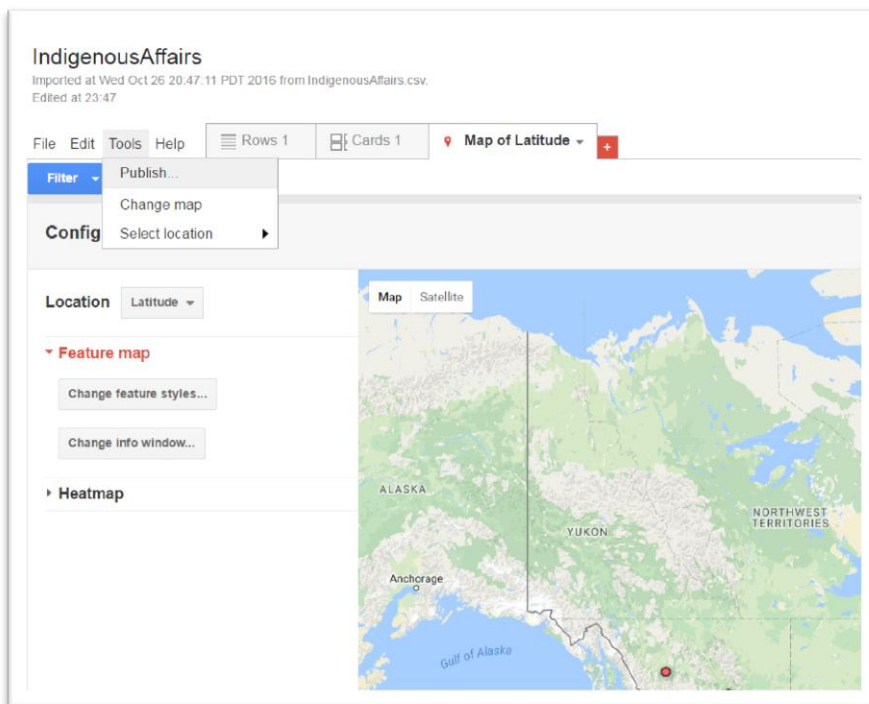
The image shows a 'Sharing settings' dialog box for a Google Fusion Tables file. The dialog is titled 'Sharing settings' and contains the following elements:

- Link to share (only accessible by collaborators):** A text box containing the URL `https://www.google.com/fusiontables/DataSource?docid=1RvPO4ttuz2qKSgag0LpiwC`.
- Share link via:** Four social media icons: Email (M), Google Plus (G+), Facebook (f), and Twitter.
- Who has access:** A section with a lock icon and the text 'Private - Only you can access', with a 'Change...' link to its right. Below this is a list of users: 'David McKie (you)' with email 'davidmckiec@gmail.com' and the role 'Is owner'.
- Invite people:** A section with a text input field containing the placeholder 'Enter names or email addresses...' and a button with a pencil icon and a dropdown arrow.
- Owner settings:** A section with a 'Learn more' link and a checkbox labeled 'Prevent editors from changing access and adding new people', which is currently unchecked.
- Done:** A blue button at the bottom left of the dialog.

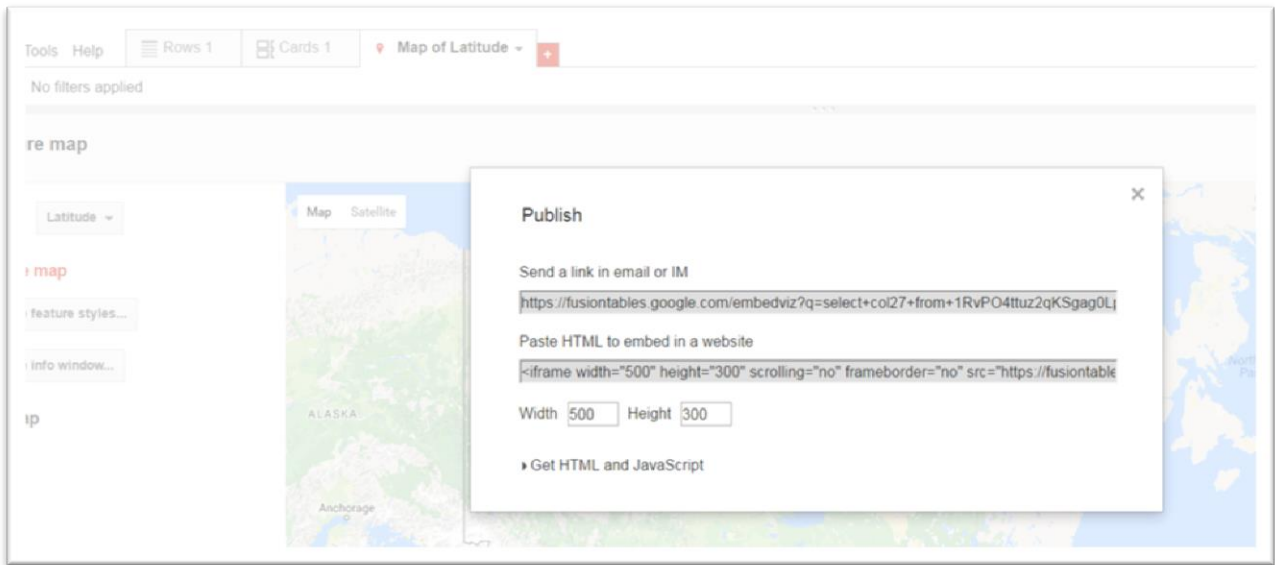
Change the first setting under “Who has access”.



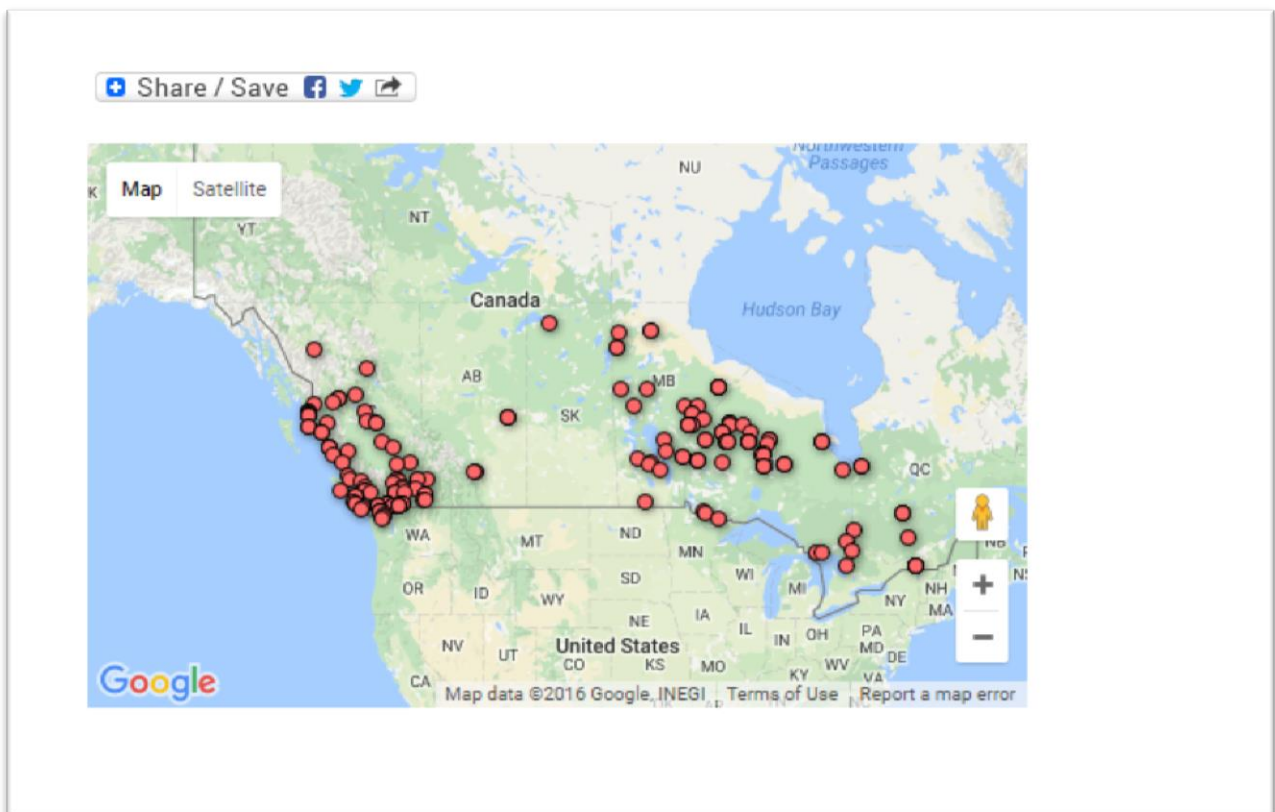
You can select either of the first two options. If you're really happy with the result and want to embed the map into your story, select the first option. If you want to restrict access to colleagues for the time being, then select the second option. For the purposes of this exercise, let's choose the first one, and then save the result.



Select the “Publish” option.



You can change the dimensions if you're not happy with the default settings. If you are, then simply copy, paste, and then embed the HTML code into your blog.



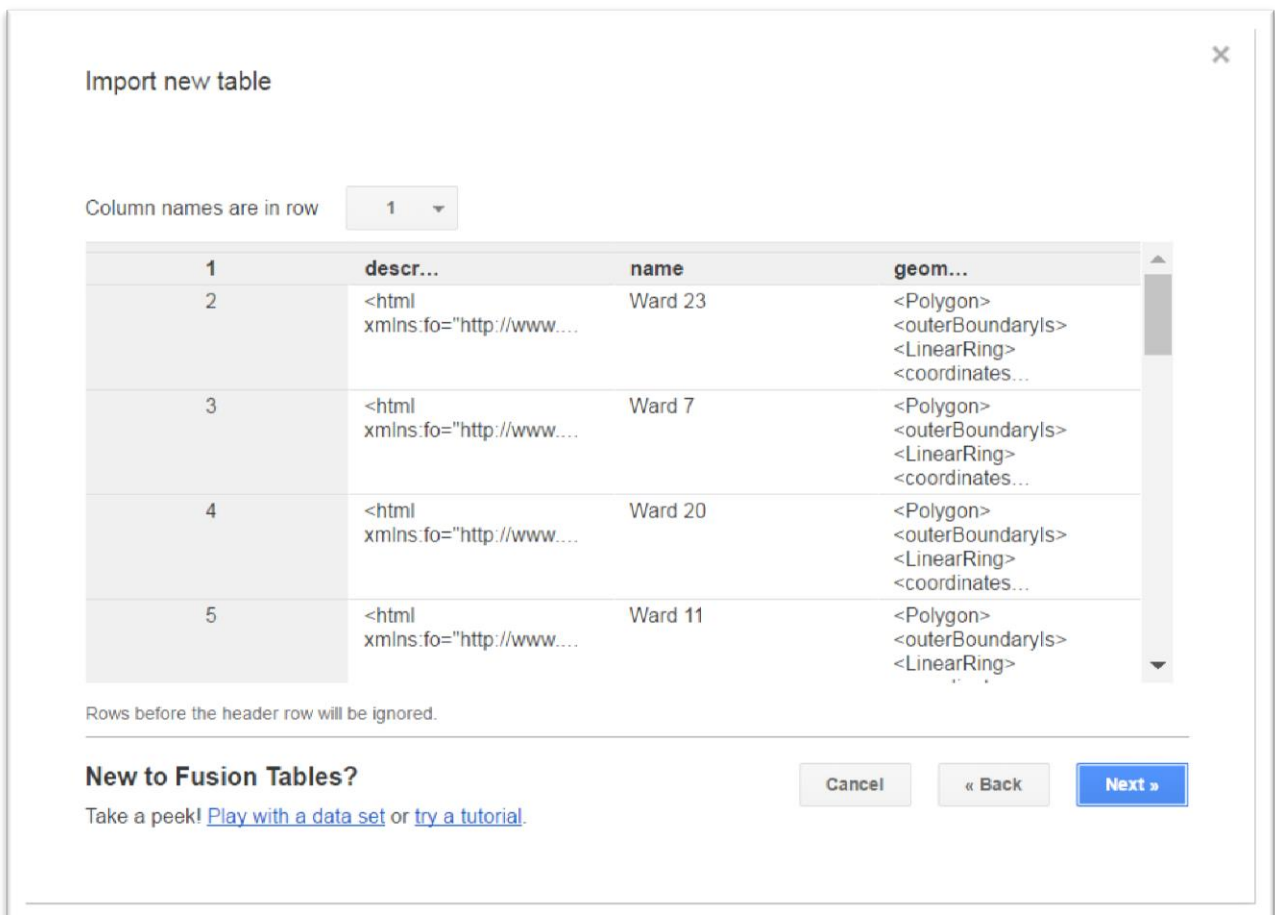
Task 2: Upload a KML file.

In addition to displaying points on a map, Fusion Tables can also combine a csv or Excel file that contains groupings of information to a KML file, which as we learned on page 121 of Chapter 6 is a native map format of Google Maps. Joining files comes in handy when, for instance, we want to see which city wards in the KML file may contain the highest number of restaurants with lousy inspection records, the highest rates of break-and-enters, or the most noise complaints for a given year.

For this tutorial we'll choose the latter. We will see which city of Ottawa wards had the highest number of noise complaints between 2013 and 2015.

Click [here](#) to down the KML file that contains the city wards.

Upload it to Fusion Tables, using the same steps in Task 1.



Import new table

Column names are in row 1

1	descr...	name	geom...
2	<html xmlns:fo="http://www...	Ward 23	<Polygon> <outerBoundaryIs> <LinearRing> <coordinates...
3	<html xmlns:fo="http://www...	Ward 7	<Polygon> <outerBoundaryIs> <LinearRing> <coordinates...
4	<html xmlns:fo="http://www...	Ward 20	<Polygon> <outerBoundaryIs> <LinearRing> <coordinates...
5	<html xmlns:fo="http://www...	Ward 11	<Polygon> <outerBoundaryIs> <LinearRing>

Rows before the header row will be ignored.

New to Fusion Tables?
Take a peek! [Play with a data set](#) or [try a tutorial](#).

Cancel « Back **Next >**

The third column contains the geographic information Fusion Tables needs to place the boundary on the Ottawa base map.
Complete the steps.

Wards-2014
 Imported at Wed Oct 26 21:38:08 PDT 2016 from Wards-2014.kml.
 Edited at 00:38

File Edit Tools Help Rows 1 Cards 1 Map of geometry

Filter No filters applied

1-23 of 23

description	name	geometry
<pre><html xmlns:fo="http://www.w3.org/1999/XSL/Format" xmlns:msxsl="urn:schemas-microsoft-com:xslt"> <head> <META http-equiv="Content-Type" content="text/html"> <meta http-equiv="content- type" content="text/html; charset=UTF-8"> </head> <body style="margin:0px 0px 0px 0px;overflow:auto;background:#FFFFFF;"> <table style="font- family:Arial,Verdana,Times;font-size:12px;text- align:left,width:100%;border- collapse:collapse;padding:3px 3px 3px 3px"> <tr style="text-align:center;font- weight:bold;background:#9CBCE2"> <td>Ward 23</td> </tr> <tr> <td> <table style="font- family:Arial,Verdana,Times;font-size:12px;text- align:left,width:100% border-spacing:0px, padding:3px 3px 3px 3px"> <tr> <td>SHAPE</td> <td>Polygon</td> </tr> <tr bgcolor="#D4E4F3"> <td>DESCRIPTION</td> <td>KANATA SOUTH - Allan Hubley</td> </tr> <tr> <td>NAME</td> <td>Ward 23</td> </tr> <tr bgcolor="#D4E4F3"> <td>NAME_FR</td> <td>Quartier 23</td> </tr> <tr> <td>WARD_NUM</td> <td>23</td> </tr> <tr bgcol...</pre>	Ward 23	KML...

Click on the “Map of geometry” tab to see the boundaries.

Wards-2014
 Imported at Wed Oct 26 21:38:08 PDT 2016 from Wards-2014.kml.
 Edited at 00:38

File Edit Tools Help Rows 1 Cards 1 Map of geometry

Filter No filters applied

Configure map

Location geometry

Feature map

Change feature styles...

Change info window...

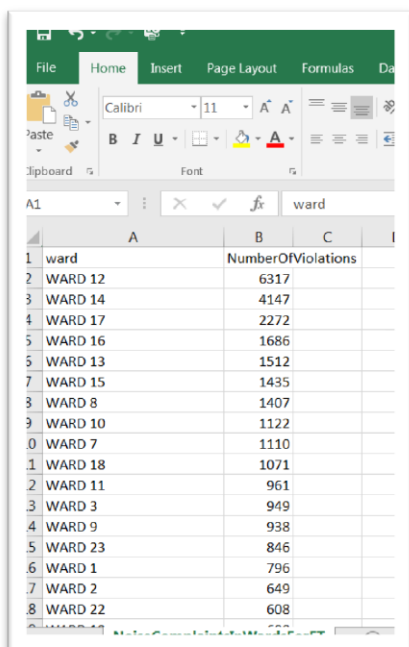
Heatmap

Task 3: Combine a KML file with a table in csv format.

Now let's join the csv file, which when merged, will populate each ward with a number of ward complaints. Return to the table, by selecting the "Rows 1" tab.



Now click [here](#) to obtain our csv file.



Save it in the same folder for this tutorial.

Upload it to Fusion Tables.

Now return to your KML table, and the second column in our KML file.

The screenshot shows the Fusion Tables interface for a table named "Wards-2014". The table has three columns: "description", "name", and "geometry". The "description" column contains XML code for a KML file. The "name" column contains "Ward 23" and "Ward 7". The "geometry" column contains "KML...".

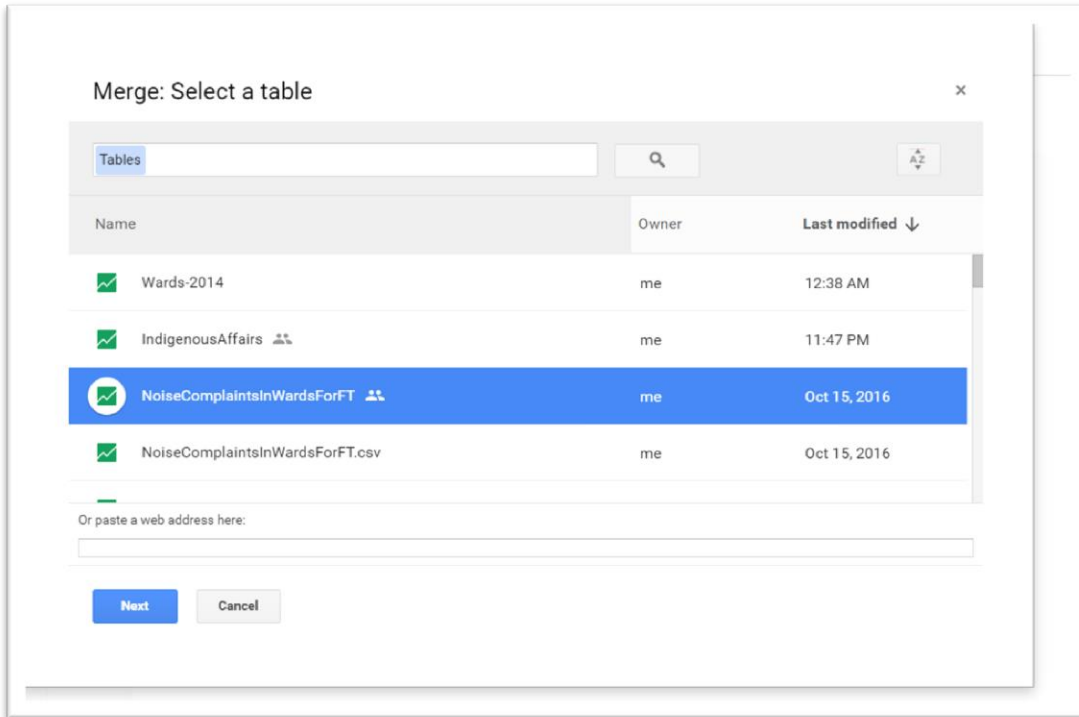
description	name	geometry
<html xmlns:fo="http://www.w3.org/1999/XSL/Format" xmlns:msxsl="urn:schemas-microsoft-com:xsil"><head> <META http-equiv="Content-Type" content="text/html"> <meta http-equiv="content-type" content="text/html, charset=UTF-8"></head> <body style="margin:0px 0px 0px 0px,overflow:auto;background:#FFFFFF,"><table style="font-family:Arial,Verdana,Times;font-size:12px;text-align:left,width:100%;border-collapse:collapse;padding:3px 3px 3px 3px"> <tr style="text-align:center;font-weight:bold;background:#9CBCE2"> <td>Ward 23</td> </tr> <tr> <td> <table style="font-family:Arial,Verdana,Times;font-size:12px;text-align:left,width:100%;border-spacing:0px;padding:3px 3px 3px 3px"> <tr> <td>SHAPE</td> <td>Polygon</td> </tr> <tr> <td>bgcolor="#D4E4F3"> <td>DESCRIPTION</td> <td>KANATA SOUTH - Allan Hubley</td> </tr> <tr> <td>NAME</td> <td>Ward 23</td> </tr> <tr> <td>bgcolor="#D4E4F3"> <td>NAME_FR</td> <td>Quartier 23</td> </tr> <tr> <td>WARD_NUM</td> <td>23</td> </tr> </table> </td> </tr> </table></body></html>	Ward 23	KML...
<html xmlns:fo="http://www.w3.org/1999/XSL/Format"	Ward 7	KML...

We will join these two columns to create a new layer. So let's stay with the KML file. Click on the "File" portion of the menu.

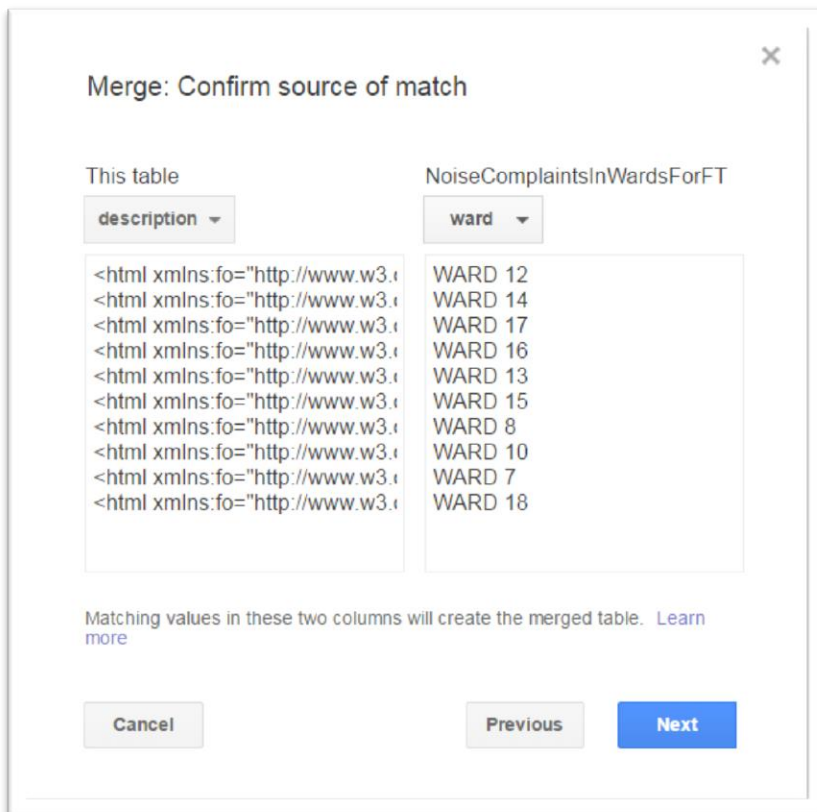
The screenshot shows the "File" menu in the Fusion Tables interface. The "Merge..." option is highlighted with a red box. Below the menu, a small table is visible with the following data:

WARD 18	1071
WARD 11	961
WARD 3	949

Select “Merge” and browse to your csv file, which is on your Google Drive.



Note: This drive looks a little different from yours. However, we have selected the correct file to merge. So click the “Next” tab.



Click on the arrow to the right of the tab that contains the “description” label.

Merge: Confirm source of match

This table	NoiseComplaintsInWardsForFT
description ▾	ward ▾
description	12
name	14
geometry	17
<html xmlns:fo="http://www.w3.o	WARD 16
<html xmlns:fo="http://www.w3.o	WARD 13
<html xmlns:fo="http://www.w3.o	WARD 15
<html xmlns:fo="http://www.w3.o	WARD 8
<html xmlns:fo="http://www.w3.o	WARD 10
<html xmlns:fo="http://www.w3.o	WARD 7
<html xmlns:fo="http://www.w3.o	WARD 18

Matching values in these two columns will create the merged table. [Learn more](#)

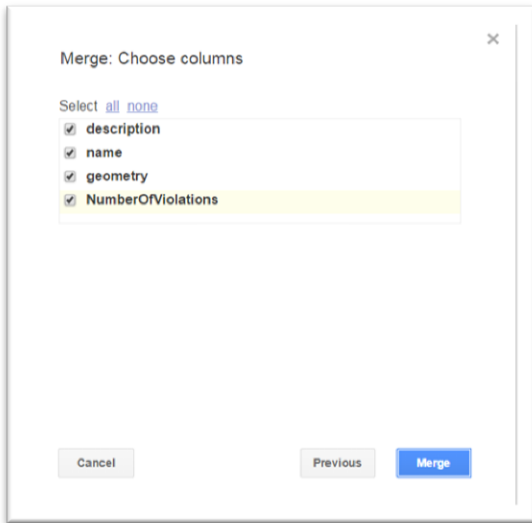
Select the “name” column.

Merge: Confirm source of match

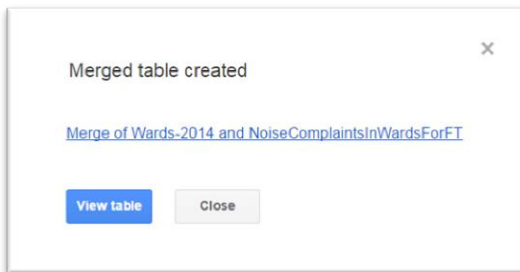
This table	NoiseComplaintsInWardsForFT
name ▾	ward ▾
Ward 23	WARD 12
Ward 7	WARD 14
Ward 20	WARD 17
Ward 11	WARD 16
Ward 8	WARD 13
Ward 22	WARD 15
Ward 4	WARD 8
Ward 9	WARD 10
Ward 16	WARD 7
Ward 17	WARD 18

Matching values in these two columns will create the merged table. [Learn more](#)

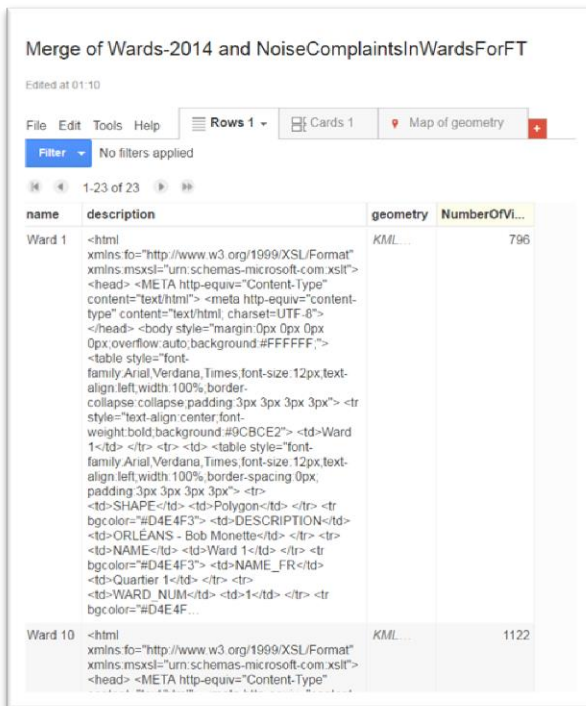
Now we have identical columns that can be matched. Select “Next”.



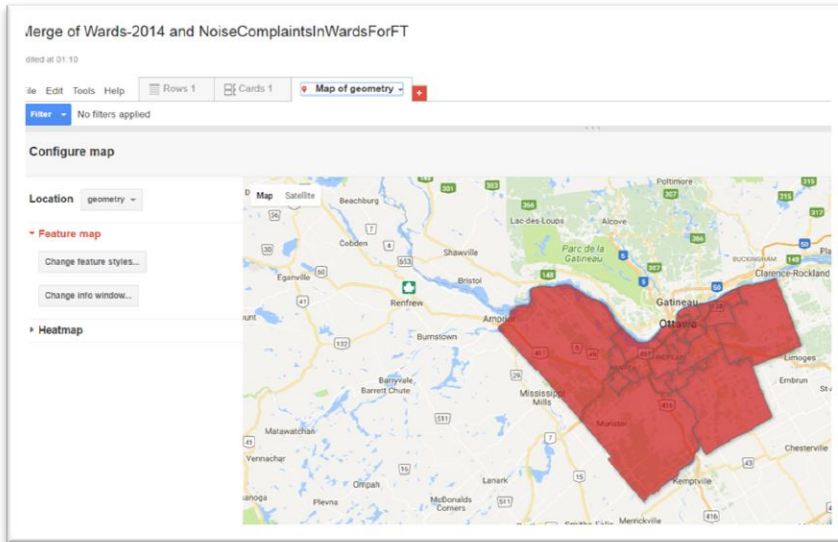
And “Merge.”



Click “View table.”



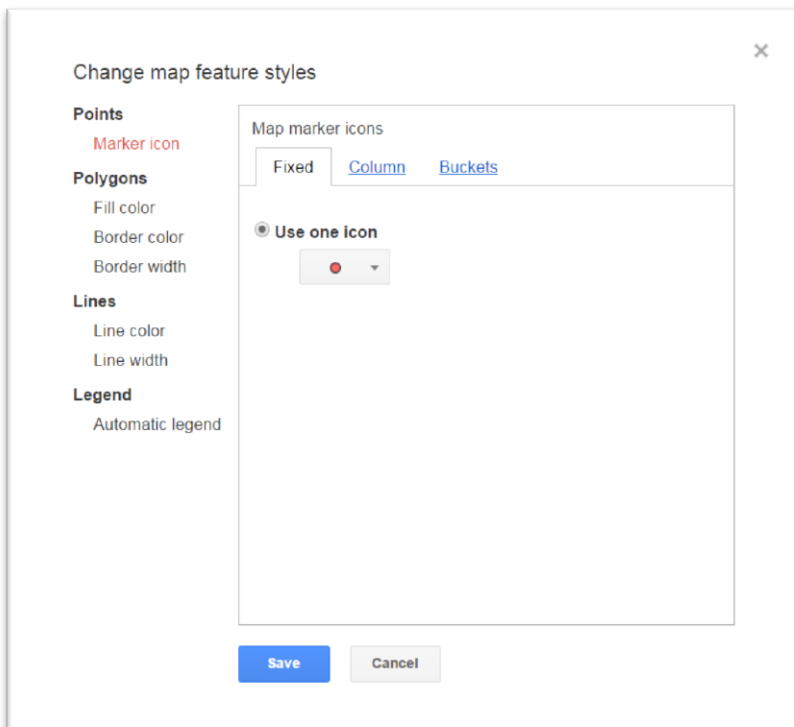
We can also see that the merged table has produced a “Map of geometry” tab. Select it.



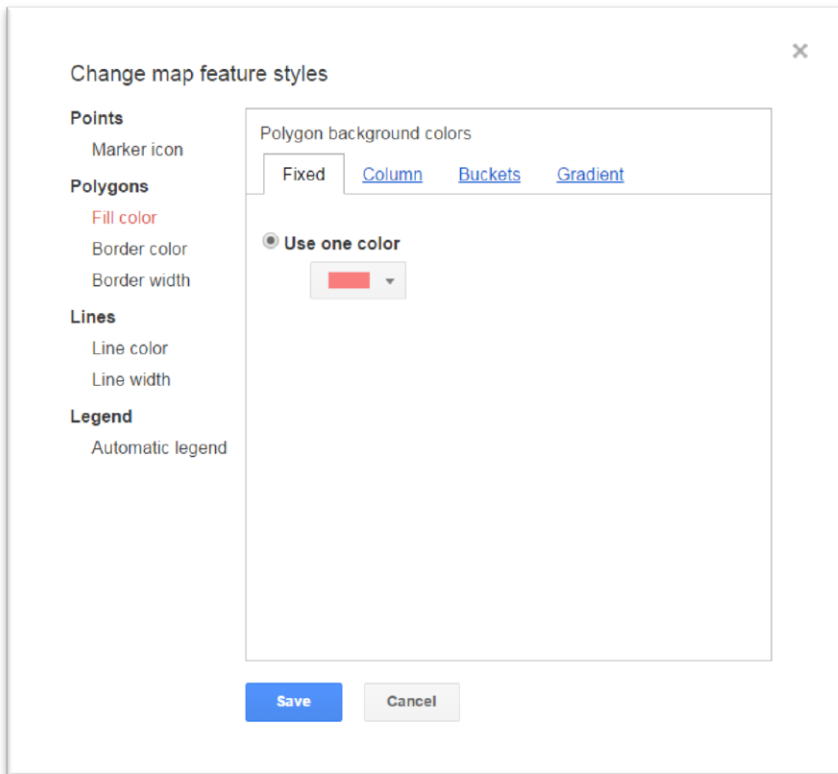
Don't be fooled by the colour. Fusion Tables needs instructions on how we want to colour-code the map.

Task 4: Colour code your map.

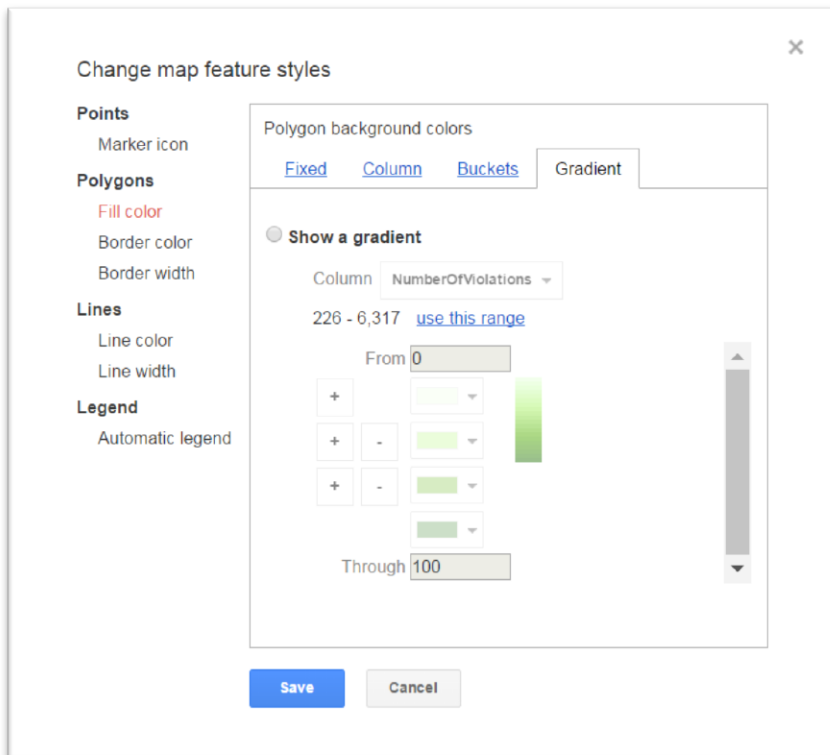
Select the “Change feature styles” tab.



Now select the “Fill color” option under the “Polygons” section to the left.

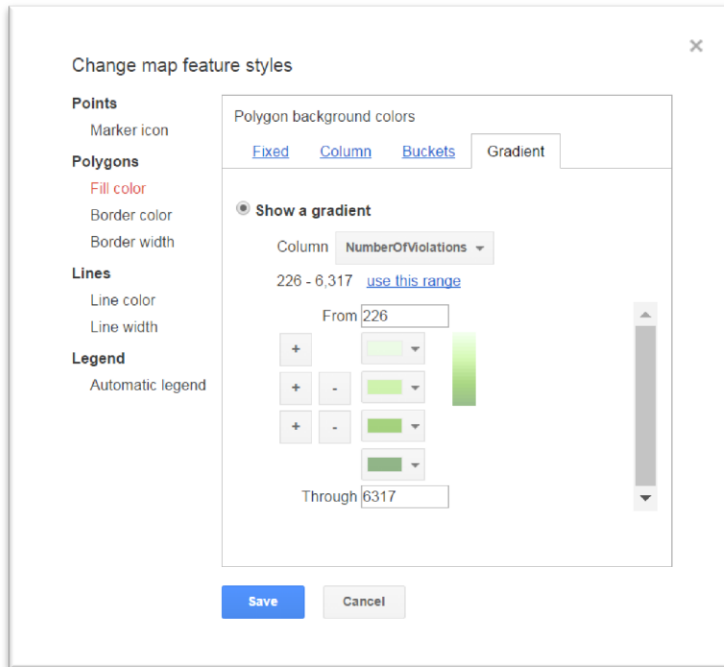


Select “Gradient.”

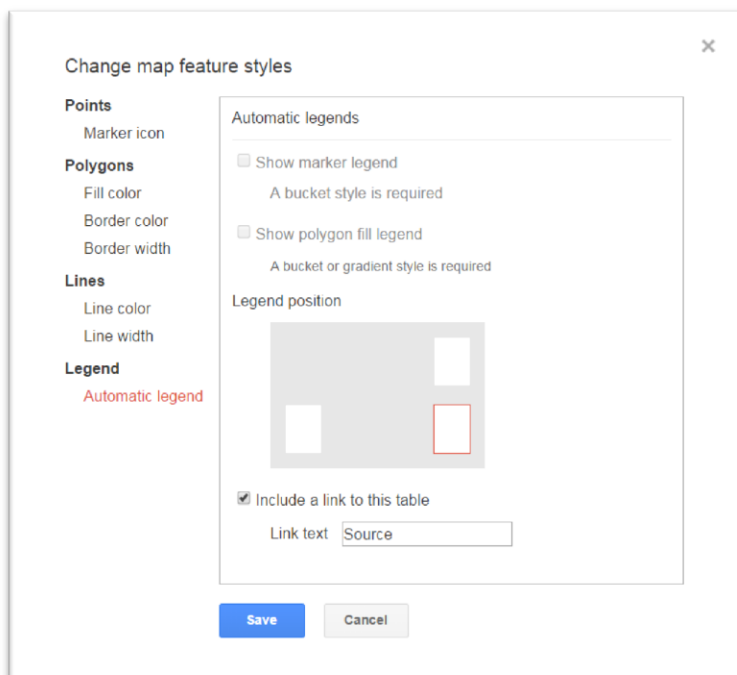


The column whose values we want to colour-code is correctly identified in the “Column” tab. And as such, has selected the correct range of values from the least to the most.

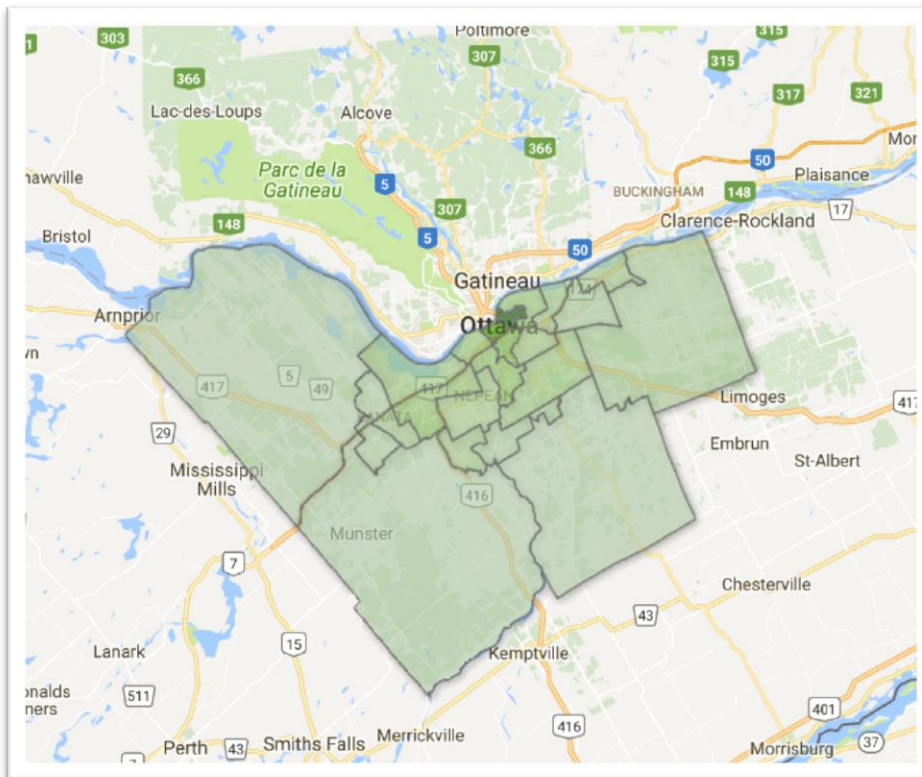
Activate “Show a gradient, and then click the “use this range” link.



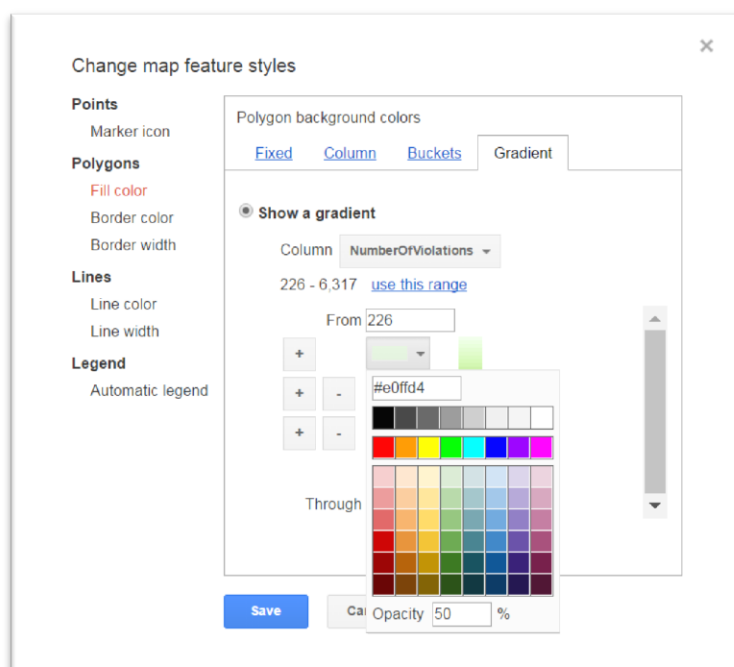
Now the range has been added to our gradient. To select the legend, click the “Automatic legend” option to the left.



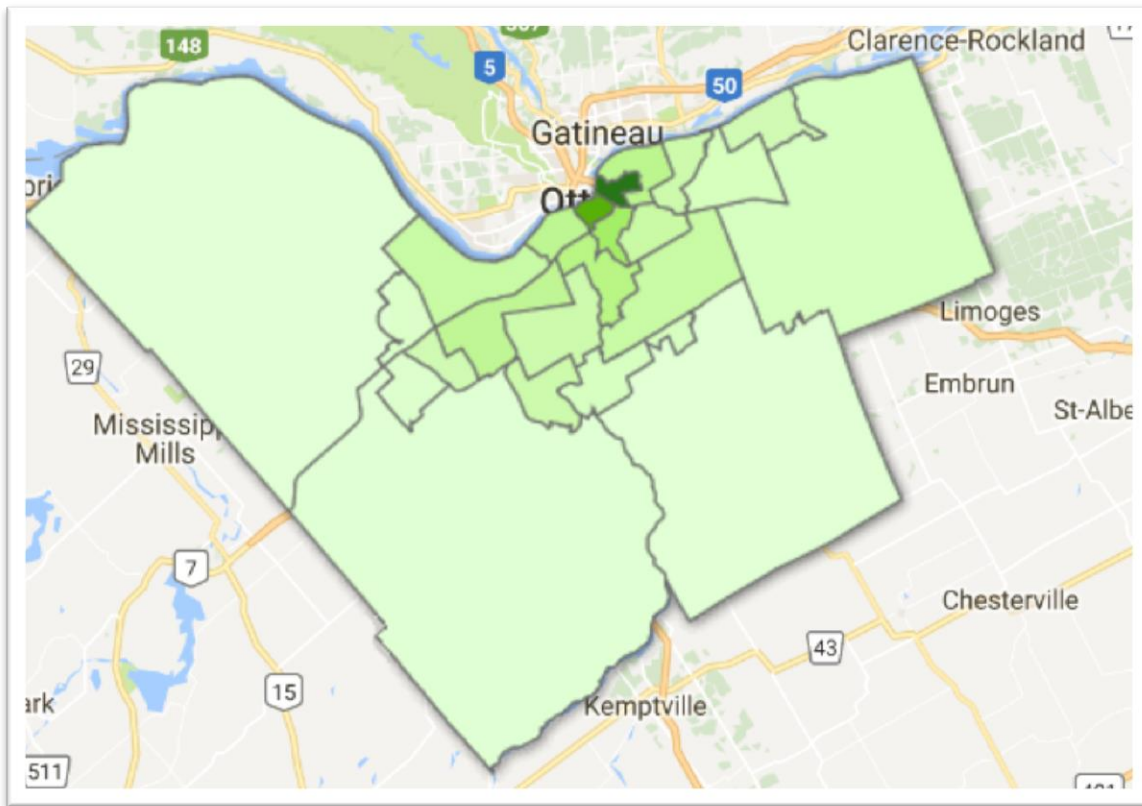
To the right, you have the option of changing the legend location on your map by clicking on one of the other two rectangles that are not highlighted. If you're happy with the location, then simply save the result to return to your map.



The colours could be a bit darker. So let's return to the "Change map features styles" dialogue box, and then to the "gradient" section.



Clicking on each colour tab in the gradient produces a palette from which you can choose different options, including the “Opacity.” Bump it up to 100% and to the same for the gradient’s other colour tabs.



That's better.

An information popup window for Ward 12. The popup has a title bar with a close button (X) and a background image of the map. The content is as follows:

name: Ward 12

description:

Ward 12	
SHAPE	Polygon
DESCRIPTION	RIDEAU-VANIER - Mathieu Fleury
NAME	Ward 12
NAME_FR	Quartier 12
WARD_NUM	12
WARD_EN	RIDEAU-VANIER
WARD_FR	RIDEAU-VANIER
COUNCILLOR	Mathieu Fleury
WARD_NAME_EN	Rideau-Vanier
WARD_NAME_FR	Rideau-Vanier
WARD_NUMBER	12
SHAPE_Length	15172.590424
SHAPE_Area	7951860.259314

NumberOfViolations: 6317

The noisiest ward is Rideau-Vanier. No surprise, given that this officially designated tourist area minutes from Parliament Hill is one of the hubs of the downtown core's night life.

As we did in task 1, we can clean up our pop-up box, by de-selecting the categories we don't want, renaming key ones and using a bit of HTML code to get a title. If we're happy with the result, we can embed this map, too.

Fusions tables are a quick and easy way to display data in many stories. There is also the added advantage of the visualizations being stored on your Google Drive, making them easy to locate and share. However, because it is in perpetual experimental or beta format, the interface and options may change from time to time.