

# Geointelligence Tutorial: Google Fusion tables

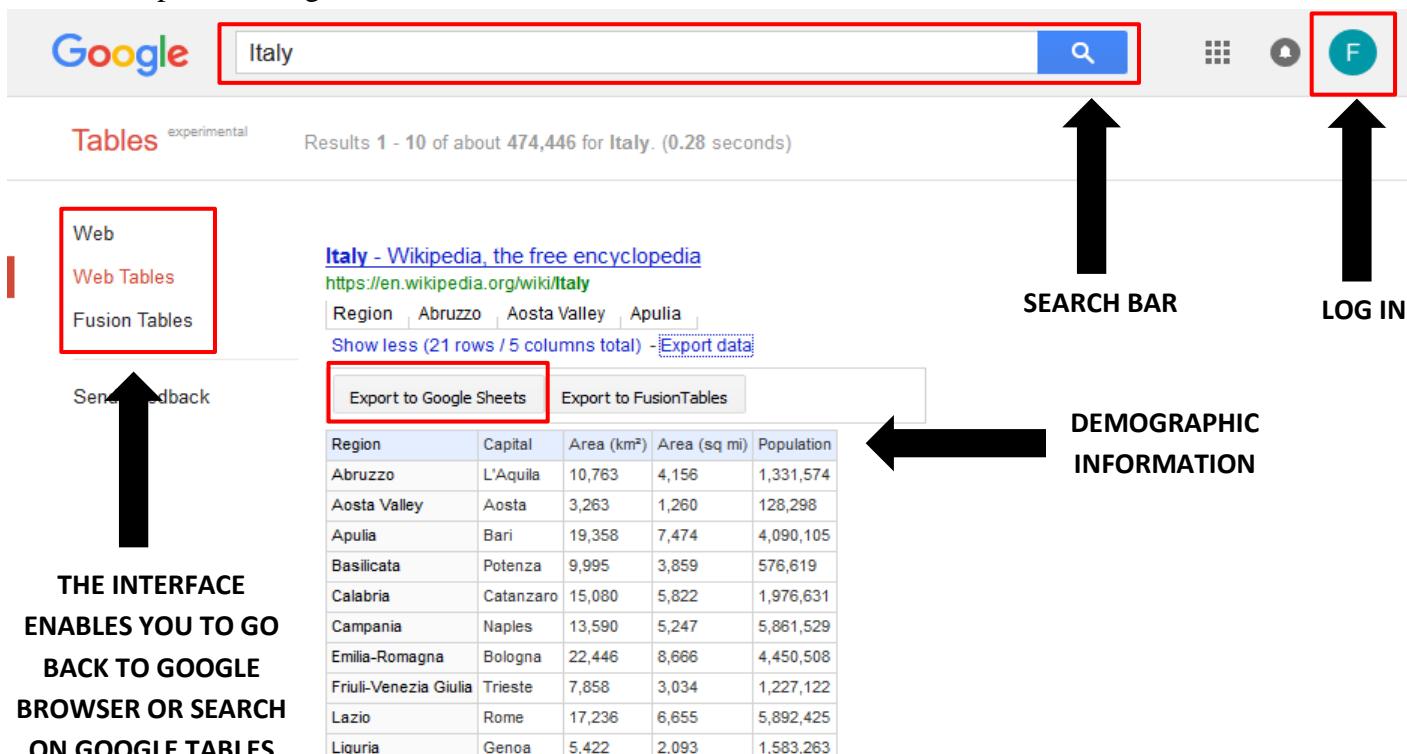
## What is Google fusion tables?

Fusion Tables is an experimental data visualization web application to gather, visualize, and share data tables. Non previous training is needed to combine available data owned from different parties to accomplish new tailor-made tables and neat products. Several resources and training material are available in the web to help you get the most of the web application. The main advantages are considered below:

- Visualize bigger table data online
- Merge your data with other people's data
- Make a map in minutes
- Compatible file extensions such as .csv, .xlm and kml
- Host data online without compromising your information

**Goal #1:** Create a map of Italy by building a new database from two *Google Fusion Tables*. Find one dataset with demographic/territorial information and merge it with the geospatial location of the 20 Italian Regions.

1. First of all sign in to your Google Account or create a [Google Account](#) if you don't have one.
2. Go to the [Google Tables website](#) and search the keyword "**Italy**", select the source from Wikipedia, export to Google Sheets.



The screenshot shows the Google Tables interface. A red box highlights the search bar containing "Italy". A red box also highlights the "Fusion Tables" option in the sidebar. Two black arrows point upwards from the text "THE INTERFACE ENABLES YOU TO GO BACK TO GOOGLE BROWSER OR SEARCH ON GOOGLE TABLES" to the "Web Tables" and "Fusion Tables" buttons respectively. A large black arrow points left from the text "DEMOGRAPHIC INFORMATION" to the "Export to Google Sheets" button in the table header. The table lists the following data:

Region	Capital	Area (km <sup>2</sup> )	Area (sq mi)	Population
Abruzzo	L'Aquila	10,763	4,156	1,331,574
Aosta Valley	Aosta	3,263	1,260	128,298
Apulia	Bari	19,358	7,474	4,090,105
Basilicata	Potenza	9,995	3,859	576,619
Calabria	Catanzaro	15,080	5,822	1,976,631
Campania	Naples	13,590	5,247	5,861,529
Emilia-Romagna	Bologna	22,446	8,666	4,450,508
Friuli-Venezia Giulia	Trieste	7,858	3,034	1,227,122
Lazio	Rome	17,236	6,655	5,892,425
Liguria	Genoa	5,422	2,093	1,583,263

3. The demographic information has been found but the file lacks geospatial data. In a **different search window** click on Fusion Tables and type "**Regioni Italiane (KML)**". Open the file to confirm the table contains geospatial coordinates of each region are correct and well represented in the map.



regioni italiane kml



Tables experimental

Results 1 - 5 of about 31 for regioni italiane kml. (0.07 seconds)

Web

Web Tables

Fusion Tables

Send Feedback

**Regioni Italiane (KML)**<https://www.google.com/fusiontables/DataSource?docid...>

description	name	geometry
Abruzzo	Abruzzo	Polygon outerboundaryis

Show less (21 rows / 3 columns total) - last modified: 25 Feb 2014

description	name	geometry
Abruzzo	Abruzzo	13.941905,41.689018
Basilicata	Basilicata	16.644638,40.120011
Calabria	Calabria	15.756665,39.924498
Campania	Campania	14.232092,40.541327

**GEOSPATIAL INFORMATION**

4. To view the map click on **Map of geometry**. The Map of Italy will appear on your screen, this means that the geospatial data is correct. Look at the image below:

Italy - Wikipedia, the free encyclopedia

en.wikipedia.org - Imported via Fusion Tables search - Edited at 16:47

Region	Capital	Area (km²)	Area (sq mi)	Population
Abruzzo	L'Aquila	10,763	4,156	1,331,574
Aosta Valley	Aosta	3,263	1,260	128,298
Apulia	Bari	19,363	7,474	4,090,105
Basilicata	Potenza			
Calabria	Catania	15,080	5,822	1,976,631
Campania	Naples	13,590	5,247	5,861,529
Emilia-Romagna	Bologna	22,446	8,666	4,450,508
Friuli-Venezia Giulia	Trieste	7,858	3,034	1,227,122
Lazio	Rome	17,236	6,655	5,892,425
Liguria	Genoa	5,422	2,093	1,583,263
Lombardy	Milan	23,844	9,206	10,002,615
Marche	Ancona	9,366	3,616	1,550,796
Molise	Campobasso	4,438	1,713	313,348
Piedmont	Turin	25,402	9,808	4,424,467
Sardinia	Cagliari	24,090	9,301	1,663,286
Sicily	Palermo	25,711	9,927	5,092,080
Tuscany	Florence	22,993	8,878	3,752,654
Trentino-Alto Adige/Südtirol	Trento	13,607	5,254	1,055,934
Umbria	Perugia	8,456	3,265	894,762
Veneto	Venice	18,399	7,104	4,927,596



Regioni Italiane (KML)

Imported at Tue Feb 25 03:58:15 PST 2014 from regioni.kml.

Attribution unknown - Edited on 2014 September 25

description	name	geometry
Veneto	KML...	
Lombardia	KML...	
Piemonte	KML...	
Valle d'Aosta	KML...	
Abruzzo	KML...	
Molise	KML...	
Puglia	KML...	
Calabria	KML...	
Marche	KML...	
Basilicata	KML...	
Liguria	KML...	
Trentino-Alto Adige	KML...	
Emilia-Romagna	Emilia-Romagna	KML...
Friuli-V.G.	Friuli V.G.	KML...
Lazio	KML...	
Sicilia	KML...	
Toscana	KML...	
Campania	Campania	KML...
Sardegna	Sardegna	KML...
Umbria	Umbria	KML...

5. Before merging or editing any information from the datasets, it is important to make a copy of each file. To do this, click on file and select “make a copy”. Rename both files to make sure that you are using the most recent data versions.

6. Now have a look at both tables and see which column match each other to create the association. In this case the column “Region” and “Name” are the most similar but some names doesn’t match because the columns are written in different language. To solve this issue use the column “Region” as reference and change the column description from the “Regione Italiane” file.



## Google Fusion Table

**Copy of Regioni Italiane (KML)**  
Copied at Thu Apr 20 08:19:39 PDT 2017 from https://fusiontables.com  
Edited at 17:22

File Edit Tools Help Rows 1 Filter No filters applied. Sorted by Region

1-20 of 20

Region	geometry
Abruzzo	KML...
Aosta Valley	KML...
Apulia	KML...
Basilicata	KML...
Calabria	KML...
Campania	KML...
Emilia-Romagna	KML...
Friuli-Venezia Giulia	KML...
Lazio	KML...
Liguria	KML...
Lombardy	KML...
Marche	KML...
Molise	KML...
Piedmont	KML...
Sardinia	KML...
Sicily	KML...
Trentino-Alto Adige	KML...
Tuscany	KML...
Umbria	KML...
Veneto	KML...

## Google Spreadsheet

**Copy of Italy - Wikipedia, the free encyclopedia**

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

fx 100% \$ .0 .00 123 Arial 10 B I

Region	Capital	Area (km²)	Area (sq mi)	Population
Abruzzo	L'Aquila	10,763	4,156	1,331,574
Aosta Valley	Aosta	3,263	1,260	128,298
Apulia	Bari	19,358	7,474	4,090,105
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Liguria	Liguria	5,422	2,093	1,583,263
Lombardy	Lombardy	23,844	9,206	10,002,615
Marche	Marche	9,366	3,616	1,550,796
Molise	Molise	4,438	1,713	313,348
Piedmont	Piedmont	25,402	9,808	4,424,467
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Sicily	Sicily	25,711	9,927	5,092,080
Trentino-Alto Adige	Tuscany	22,993	8,878	3,752,654
Umbria	Trentino-Alto Adige	13,607	5,254	1,055,934
Veneto	Umbria	8,456	3,265	894,762
	Venice	18,399	7,104	4,927,596

7. After completing the editing work on both tables, it's time to transform the file '**Italy**' from Google Sheets to *Google Fusion Tables*. Click [here](#) to select the file.

The screenshot shows two windows side-by-side. On the left, the 'Import new table' dialog is open, showing options like 'From this computer', 'Google Spreadsheets' (which is selected and highlighted with a red box), and 'Create empty table'. Below this is a search bar for 'Or search public data tables'. At the bottom, there are 'New to Fusion Tables?' links and a 'Next >' button. On the right, a 'Select a spreadsheet' dialog is open, showing a list of spreadsheets including 'Copy of Italy - Wikipedia...' (also highlighted with a red box). Below the list is a 'Select' button (also highlighted with a red box).

8. To finalize the work, choose “**find a table to merge**”, then select the file “**Italy**” from google drive and confirm the column association to merge both files.

The screenshot shows the 'Merge: Confirm source of match' dialog. It lists two tables: 'This table' (Regioni Italiane KML) and 'Italy - Wikipedia, the free encyclopedia' (Italy). Both tables have a 'Region' column. A red box highlights the 'Region' column in both tables. Below the tables, a message says 'Matching values in these two columns will create the merged table.' At the bottom, there are 'Cancel', 'Previous', and 'Next' buttons, along with a 'Download...' button.

9. The final product should look like this. For reference purposes we will call this project “**Population in Italy**”

Merge of Fusion Tables. Population in Italy

en.wikipedia.org - Imported via Fusion Tables search - Edited at 18:16

File Edit Tools Help Rows 1 Cards 1 Map of geometry +

Filter No filters applied

1-20 of 20

Region	Geospatial location	Capital	Area (km <sup>2</sup> )	Area (mi <sup>2</sup> )	Population
Abruzzo	KML...	L'Aquila	10,763	4,156	1,331,574
Aosta Valley	KML...	Aosta	3,263	1,260	128,298
Apulia	KML...	Bari	19,358	7,474	4,090,105
Basilicata	KML...	Potenza	9,995	3,859	576,619
Calabria	KML...	Catania	15,080	5,822	1,976,631
Campania	KML...	Naples	13,590	5,247	5,861,529
Emilia-Romagna	KML...	Bologna	22,446	8,666	4,450,508
Friuli-Venezia Giulia	KML...	Trieste	7,858	3,034	1,227,122
Lazio	KML...	Rome	17,236	6,655	5,892,425
Liguria	KML...	Genoa	5,422	2,093	1,583,263
Lombardy	KML...	Milan	23,844	9,206	10,002,615
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Sardinia	KML...	Cagliari	24,090	9,301	1,663,286
Sicily	KML...	Palermo	25,711	9,927	5,092,080
Trentino-Alto Adige	KML...	Trento	13,607	5,254	1,055,934
Tuscany	KML...	Florence	22,993	8,878	3,752,654
Umbria	KML...	Perugia	8,456	3,265	894,762
Veneto	KML...	Venice	18,399	7,104	4,927,596



Note: Remember to improve the visualization of your map by changing the features, to filter the data and customized the pop-up information. Indicators can be added at any time by repeating the previous steps or by exporting a spreadsheet from your computer.

Congratulations!

You have successfully **completed** section #1 of the tutorial.



**Goal #2:** Create a new database about environmental risks in Italy from an official source and link it to Google Fusion Table “**Population in Italy**”.

1. Before start looking for new information, make sure you bookmark the Fusion Table “**Population in Italy**” or simply leave it open. You will receive new input to add more data to the list.
2. Now, depending on your current level of expertise, select one of the following methods to continue with the tutorial:
  - **Beginner:** Use the [ready-to-go dataset from Google Fusion Tables](#). and continue the tutorial from point 6. To open the data click [here](#).
  - **Intermediate:** Use the table available at the end of this tutorial and continue from point 6.
  - **Advance:** In case you have previously worked with open data and have a general knowledge of Google Tables, follow steps 3, 4 and 5.
3. Open a new tab in Google and type “**Dissesto Idrogeologico in Italia**” (Hydrogeological Risks in Italy) to download the official 2015 report from The National Institute for Environmental Protection and Research, ISPRA. If you would like to know more information about the ISPRA report click [here](#).
4. Once you visualize the website, click in “**scarica la pubblicazione**” to download the publication in PDF format. Compile a form if needed.

#### **Dissesto idrogeologico in Italia: pericolosità e indicatori di rischio - Rapporto 2015**

[Mi piace 352](#) [Tweet](#)

Il Rapporto fornisce un quadro di riferimento completo ed aggiornato sul dissesto idrogeologico in Italia per frane, alluvioni ed erosione costiera. Il Rapporto presenta le mappe nazionali della pericolosità da frana (Piani di Assetto Idrogeologico – PAI) e della pericolosità idraulica (D.Lgs. 49/2010, recepimento della Direttiva Alluvioni 2007/60/CE), realizzate nel 2015 dall'ISPRA mediante l'armonizzazione e la mosaicatura delle aree perimetrata dalle Autorità di Bacino, Regioni e Province Autonome sul proprio territorio di competenza.

Il Rapporto fornisce inoltre i dati degli indicatori nazionali di rischio per frane e alluvioni relativi a popolazione, imprese, beni culturali e superfici artificiali, elaborati sul territorio nazionale con l'obiettivo di fornire un'importante base conoscitiva a supporto delle politiche di mitigazione del rischio.

Pubblicazione disponibile solo in formato elettronico

[Scarica la pubblicazione \(pdf - 12.7 mb\)](#)

[Appendice Rapporto 233/2015 \(pdf - 9.8 mb\)](#)

[Sintesi Rapporto 233/2015 \(pdf - 2.4 mb\)](#)



[Stampa](#)

Mosaicature nazionali di pericolosità in open data ↗

[Carta della popolazione a rischio frane in Italia](#)

[Carta della popolazione a rischio alluvioni in Italia](#)

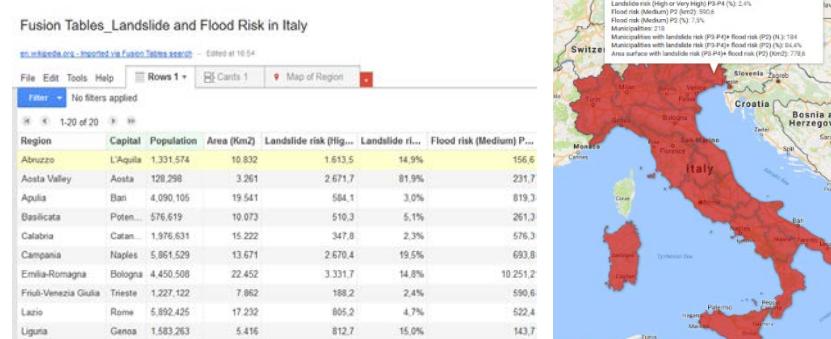
5. Create a new file excel with the name “**Risks in Italy**” and build a new table by copying the statistics of landslides and flood risk in the country published in the ISPRA report. Create the new database base on the following indicators:

- *Superficie regionale; pericolosità da frana elevata (P3) e molto elevata (P4);*
- *Pericolosità idraulica media (P2); numero totale di comuni per Regione;*
- *Comuni con pericolosità da frana (P3/P4) e/o pericolosità media idraulica (P2);*
- *Superfici con pericolosità da frana (P3/P4) e pericolosità media idraulica (P2);*
- *Patrimonio culturale a potenziale rischio di frana (P3/P4);*
- *Patrimonio culturale a potenziale rischio idraulico (P2).*

**Note:** Considering that **Goal #2 aims to map only regional data**, disregard the data from the autonomous provinces Trento and Bolzano. Be aware that the Regions of Italy are listed in Italian in the ISPRA report. Make sure **the names of each Region are the same** as in the previous project, therefore homogenize the names to English. The expected list should look like the table at the end of the tutorial (next page).

- The next step is to bring “**Risks in Italy**” into a Google Fusion table. To do this go back to “**Population in Italy**”, click on File, new, upload the spreadsheet from your computer and confirm the information. The table “Risks in Italy” will appear on the screen.

- Let's now merge both “**Population in Italy**” with “**Risks in Italy**” by following step #7. Rename the name as “Fusion Tables\_Landslide and Flood Risk in Italy”. A good example of this would look like the following:



- Now it's time for you to play with the database and create different maps. To map the landslide risk in Italy click on change feature styles, fill color and select the corresponding like the following example. Tailor as much as you prefer. Don't forget to include the legend!



Region	Area	Landslide risk (High or Very High) P3-P4			Flood risk (Medium) P2		Municipalities	Municipalities with landslide risk (P3-P4)+ flood risk (P2)		Area surface with landslide risk (P3-P4)+ flood risk (P2)		Cultural heritage with potential landslide risk (P3-P4)		Cultural heritage with potential flood risk (P2)	
		Km <sup>2</sup>	Km <sup>2</sup>	%	Km <sup>2</sup>	%		N.	N.	%	Km <sup>2</sup>	%	N.	%	N.
Piedmont	25.387	1.515,7	6,0%		1985,3	7,8%	1.206	1.131	93,8%	3.412,1	13,4%	658	5,0%	1.261	9,7%
Aosta Valley	3.261	2.671,7	81,9%		231,7	7,1%	74	74	100,0%	2.712,9	83,2%	206	58,7%	48	13,7%
Lombardy	23.863	1.450,3	6,1%		2.021,5	8,5%	1.544	1.173	76,0%	3.347,4	14,0%	280	1,9%	972	6,5%
Trentino-Alto Adige	13.605	1.398,9	10,3%		80,8	0,6%	333	295	88,6%	1.471,6	10,8%	82	4,7%	8	0,5%
Veneto	18.407	105,6	0,6%		1.758,3	9,6%	581	374	64,4%	1.863,7	10,1%	108	0,5%	4.169	18,2%
Friuli-Venezia Giulia	7.862	188,2	2,4%		590,6	7,5%	218	184	84,4%	778,6	9,9%	83	1,8%	497	10,5%
Liguria	5.416	812,7	15,0%		143,7	2,7%	235	235	100,0%	954,2	17,6%	856	6,1%	3.236	23,1%
Emilia-Romagna	22.452	3.331,7	14,8%		10.251,2	45,7%	348	348	100,0%	13.550,0	60,3%	1.044	4,5%	13.274	56,6%
Tuscany	22.987	3.062,6	13,3%		2.550,2	11,1%	287	287	100,0%	5.521,4	24,0%	1.457	9,1%	3.125	19,6%
Umbria	8.464	24,8	0,3%		337,8	4,0%	92	82	89,1%	362,5	4,3%	103	1,9%	280	5,2%
Marche	9.401	669,6	7,1%		208,2	2,2%	239	239	100,0%	877,2	9,3%	1.247	6,1%	488	2,4%
Lazio	17.232	805,2	4,7%		522,4	3,0%	378	321	84,9%	1.325,6	7,7%	565	4,4%	335	2,6%
Abruzzo	10.832	1.613,5	14,9%		156,6	1,4%	305	301	98,7%	1.768,9	16,3%	318	8,4%	152	4,0%
Molise	4.461	713,4	16,0%		139,2	3,1%	136	136	100,0%	848,2	19,0%	809	24,7%	40	1,2%
Campania	13.671	2.670,4	19,5%		693,8	5,1%	551	504	91,5%	3.338,2	24,4%	953	12,2%	335	4,3%
Apulia	19.541	584,1	3,0%		819,3	4,2%	258	234	90,7%	1.401,0	7,2%	360	4,8%	235	3,1%
Basilicata	10.073	510,3	5,1%		261,3	2,6%	131	131	100,0%	770,1	7,6%	188	10,5%	30	1,7%
Calabria	15.222	347,8	2,3%		576,3	3,8%	409	408	99,8%	914,1	6,0%	429	10,1%	180	4,2%
Sicily	25.832	387,0	1,5%		385,6	1,5%	390	360	92,3%	772,3	3,0%	420	5,3%	63	0,8%
Sardinia	24.1	1.066,0	4,4%		696,8	2,9%	377	328	87,0%	1.757,0	7,3%	169	3,6%	277	5,9%

Congratulations!

You have successfully **completed** section #2 of the tutorial.



### Goal #3.1: Create a point map from a single database using Google Web Tables open data

- Renewable energy

The renewable energy industry is empowered by innovation and technology. As a result of the rising global demand for renewable energies, countries are shaping the cities of the future to be more environmentally friendly and fossil-fuel free. In this tutorial we will map the production of renewable energies in Europe.

- Open *Google Web Tables* and search “Renewable energy Europe”.
- From the dropdown list, we will work using **option #1 “Renewable energy in the European Union”**. Click on “show more”, “export data” and “export to google sheets”.

The screenshot shows the Google Web Tables interface. The search query "renewable energy europe" is entered in the search bar. Below the search bar, the results section is titled "Tables experimental" and shows "Results 1 - 10 of about 71,605 for renewable energy europe. (0.33 seconds)". A red box highlights the "Web Tables" button under the "Web" dropdown. The main result is a table titled "Renewable energy in the European Union - Wikipedia, the free encyclopedia" with the URL [https://en.wikipedia.org/wiki/Renewable\\_energy\\_in\\_the\\_European\\_Union](https://en.wikipedia.org/wiki/Renewable_energy_in_the_European_Union). The table has columns: No, Country, 2015, 2014, 2013. The first row shows EU-28 with values 141,579, 128,751, 117,289. The second row shows Germany with values 44,946, 39,165, 33,730. The third row shows Spain with values 23,025, 22,986, 22,959. The fourth row shows Iceland with values 3, 3, 1.8. The fifth row shows Europe (MW) with values 147,772, 133,968, 121,474. Below the table, there are buttons for "Send Feedback", "Export to Google Sheets" (which is highlighted with a red box), and "Export to FusionTables".

No	Country	2015	2014	2013
-	EU-28	141,579	128,751	117,289
1	Germany	44,946	39,165	33,730
2	Spain	23,025	22,986	22,959
-	Iceland	3	3	1.8
-	Europe (MW)	147,772	133,968	121,474

- We need to make sure that the data is displayed in a correct way in order to be recognized by *Google Fusion Tables*. Sometimes this revision of data involves filtering and cleaning work. As we can see, some lines are not countries. Delete them to avoid problems of data visualization

The screenshot shows a Google Sheets document titled "Renewable energy in the European Union - Wikipedia, the free encyclopedia". The sheet has a header row with columns A, B, C, D, E, F. The data starts with a row for "EU-28" and then continues with individual country rows. The row for "EU-28" is highlighted with a red box. The data is as follows:

	A	B	C	D	E	F
1	No	Country	2015	2014	2013	2012
2	-	EU-28	141,579	128,751	117,289	105,696
3		1 Germany	44,946	39,165	33,730	31,332
4		2 Spain	23,025	22,986	22,959	22,796
5		3 UK	13,603	12,440	10,531	8,445
6		4 France	10,358	9,285	8,254	7,196
7		5 Italy	8,958	8,663	8,551	8,144
8		6 Sweden	6,025	5,425	4,470	3,745
9		7 Portugal	5,079	4,914	4,724	4,525
10		8 Poland	5,100	3,834	3,390	2,497
11		9 Denmark	5,064	4,845	4,772	4,162
12		10 Netherlands	3,431	2,805	2,693	2,391

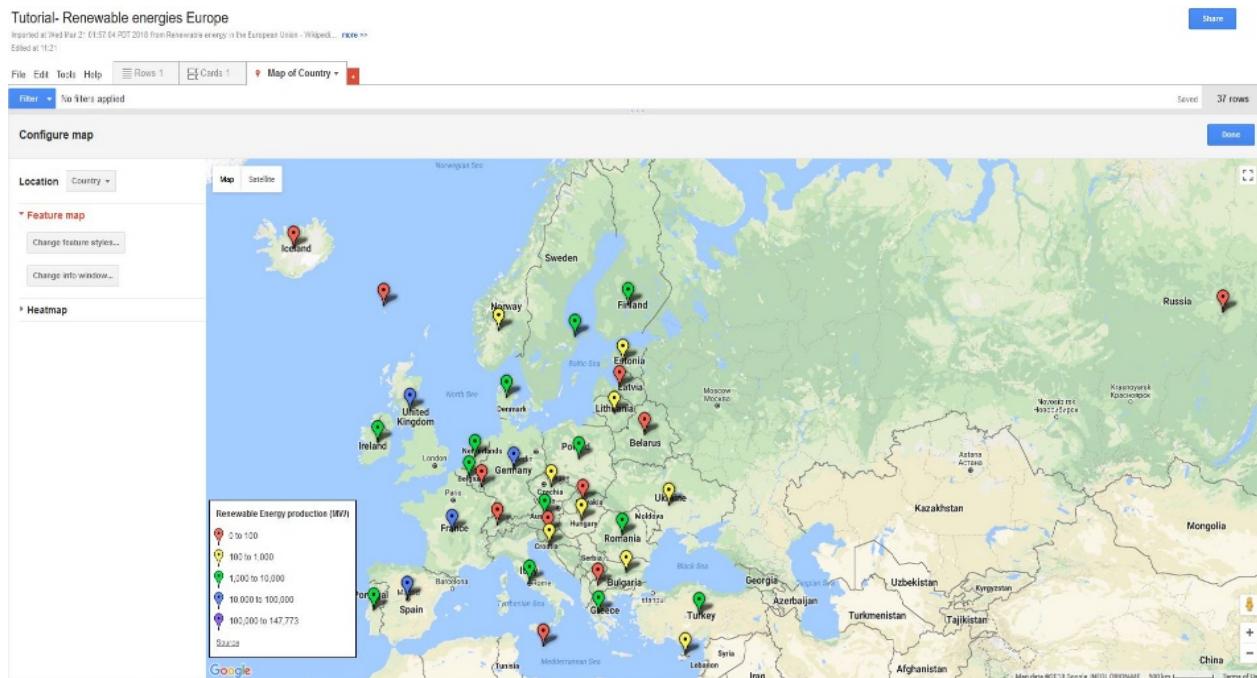
4. The database is ready for *Google Fusion Tables*. To import the table click [here](#). Click on *Google Spreadsheets* and select the file “Renewable energy in the European Union”. Now you’ll see the list of countries in *Google Fusion Tables*. Click on “Map of Country” to visualize the data in the map. Even if the data does not contain any geospatial reference, *Google Fusion Tables* automatically geocodes the addresses based on the location column, which in this case is “Country”.

The first screenshot shows the "Import new table" dialog box. It has three options: "From this computer", "Google Spreadsheets" (which is selected and highlighted with a red box), and "Create empty table". Below these are search fields for public data tables and a "Next" button. The second screenshot shows the "Select a spreadsheet" dialog box with a list of spreadsheets. One titled "Tutorial-Renewable..." is selected and highlighted with a red box. A "Select" button is also highlighted with a red box. The third screenshot shows the "Tutorial- Renewable energies Europe" page in Google Fusion Tables. It includes a "Geocode" section, a "Configure map" section with a map of Europe showing renewable energy locations, and a summary of 16 geocoded rows.

5. The function “Change features styles” enables all users to improve the visualization of the map by choosing from the variety of styles and colors based on the data available and values of your interest. Divide the buckets into **5 custom values** and select the pin from red to purple. **Activate the legend** and **change the info window layout** to only the country name and the latest value (2015).

The left screenshot shows the "Change map feature styles" dialog for "Points". It highlights the "Marker icon" section, the "Buckets" tab (which is selected and highlighted with a red box), and the "Legend" section. A "Save" button is also highlighted with a red box. The right screenshot shows the "Change info window layout" dialog. It highlights the "Custom" tab, a checkbox for "Country" (which is checked and highlighted with a red box), a checkbox for "2015" (which is checked and highlighted with a red box), and a "Save" button.

## 6. The finished product should look like



Congratulations!

You have successfully **completed** section #3.1 of the tutorial.



**Goal #3.2:** Create a point map **based on Google Web Tables** open data using an automatic procedure to separate data that cannot be mapped in the original format.

- Environmental risk

Air pollution is the greatest environmental risk to health in urban areas. In this tutorial we will concentrate in the use of open data indicators in Europe to classify the cities with the highest pollution index.

1. Open *Google Web Tables* and search “*Europe Pollution Index*”.
2. From the dropdown list, we will work using **option #2 “Europe: Pollution Index by City 2015”**. Click on “**show more**”, “**export data**” and “**export to google sheets**”.

Google Europe: Pollution index

Tables experimental Results 1 - 10 of about 6,040 for Europe: Pollution index. (0.13 seconds)

Web

Pollution Index by City 2016  
http://www.numbeo.com/pollution/rankings.jsp  
City Tetovo Macedonia Cairo Egypt Kathmandu Nepal Manila Philippines

Web Tables

Pollution Index by City 2016  
http://www.numbeo.com/pollution/rankings.jsp  
City Tetovo Macedonia Cairo Egypt Kathmandu Nepal Manila Philippines

Fusion Tables

Pollution Index by City 2016  
http://www.numbeo.com/pollution/rankings.jsp  
City Tetovo Macedonia Cairo Egypt Kathmandu Nepal Manila Philippines

Show more (202 rows / 4 columns total) - Export data

Send Feedback

Europe: Pollution Index by City 2015  
http://www.numbeo.com/pollution/region\_rankings.jsp?title=2015&region=150  
City Naples Italy Pancevo Serbia Dnipropetrovsk ... Skopje Macedonia

Show less (158 rows / 4 columns total) - Export data

Export to Google Sheets Export to FusionTables

Rank	City	Pollution Index	Exp Pollution Index
1	Naples, Italy	89.22	161.75
2	Pancevo, Serbia	88.97	176.30
3	Dnipropetrovsk, Ukraine	86.55	157.50
4	Skopje, Macedonia	84.82	163.38
5	Moscow, Russia	81.58	147.19
6	Kiev, Ukraine	81.58	148.03
7	Rybnik, Poland	81.38	157.48
8	Brescia, Italy	81.32	149.10
9	Turin, Italy	78.53	147.77
10	Tirana, Albania	76.36	134.60

3. City and country are together in the same cell. Unfortunately *Google Fusion Tables* cannot map this data, unless two columns are created, one for cities and for countries respectively. When working with **big data**, users are highly recommended to **avoid manual procedures** because is **time consuming and typos** are likely to be **sources of errors**. **Automatic procedures** is the way to go to separate lists.

Europe: Pollution Index by City 2015

Rank	City	Pollution Index	Exp Pollution Index
1	Naples, Italy	89.22	161.75
2	Pancevo, Serbia	88.97	176.30
3	Dnipropetrovsk, Ukraine	86.55	157.50
4	Skopje, Macedonia	84.82	163.38
5	Moscow, Russia	81.58	147.19
6	Kiev, Ukraine	81.58	148.03
7	Rybnik, Poland	81.38	157.48
8	Brescia, Italy	81.32	149.10
9	Turin, Italy	78.53	147.77
10	Tirana, Albania	76.36	134.60
11	Bucharest, Romania	76.06	134.91
12	Sliema, Malta	75.57	134.32
13	Varna, Bulgaria	75.31	134.94
14	Iasi, Romania	74.35	135.76
15	Milan, Italy	73.52	134.74

4. To start the automatic procedure, download the data as .csv file.

5. Move the file to a new folder and open as .txt file using the **Notepad**. The city and name are within quotation marks (""). To separate both, click in “**modify**” and “**replace**”.

Rank	City	Pollution Index	Exp Pollution Index
1	"Naples, Italy"	89.22.00	162.15.00
2	"Pancevo, Serbia"	89.37.00	176.30.00
3	"Dnipropetrovsk, Ukraine"	86.55.00	157.50.00
4	"Skopje, Macedonia"	75.57.00	134.32.00
5	"Moscow, Russia"	75.31.00	135.34.00
6	"Kiev, Ukraine"	74.35.00	136.16.00
7	"Rybniy, Poland"	73.52.00	135.14.00
8	"Breslau, Germany"	73.30.00	129.10.00
9	"Tirana, Albania"	73.16.00	129.42.00
10	"Iasi, Romania"	73.13.00	136.31.00
11	"Bucarest, Romania"	72.07.00	135.06.00

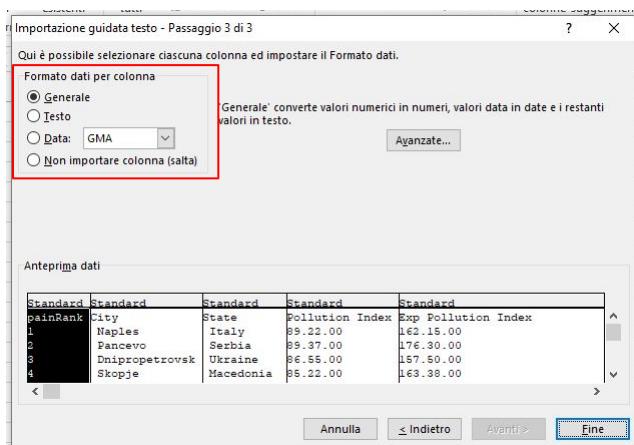
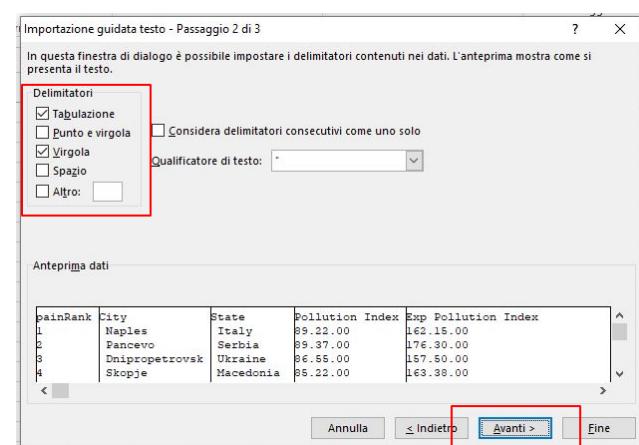
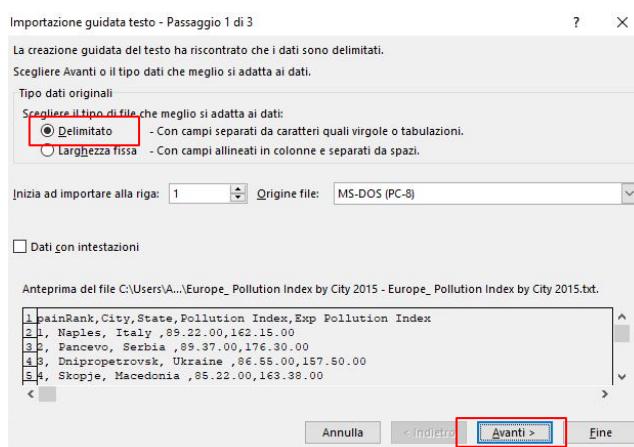
6. To erase the quotes fill the blanks as follows: **Find what:** “ (one quotation mark), **Replace with:** (one single-space line) and “**Apply to all**”. Verify that the quotes are no longer in the file. Now add in the first line the word “**Country**” after the word “**City**”. Save the file as “**Pollution Index**”.

Rank	Country	City	Pollution Index	Exp Pollution Index
1	Italy	Naples	89.22.00	162.15.00
2	Serbia	Pancevo	89.37.00	176.30.00
3	Ukraine	Dnipropetrovsk	86.55.00	157.50.00
4	Macedonia	Skopje	75.57.00	134.32.00
5	Russia	Moscow	75.31.00	135.34.00
6	Ukraine	Kiev	74.35.00	136.16.00
7	Poland	Rybniy	73.52.00	135.14.00
8	Germany	Breslau	73.30.00	129.10.00
9	Albania	Tirana	73.16.00	129.42.00
10	Romania	Iasi	73.13.00	136.31.00
11	Romania	Bucarest	72.07.00	135.06.00

7. Now it's time to visualize the data in separate columns. Open a new file excel and import the new text file by clicking on “DATA”.

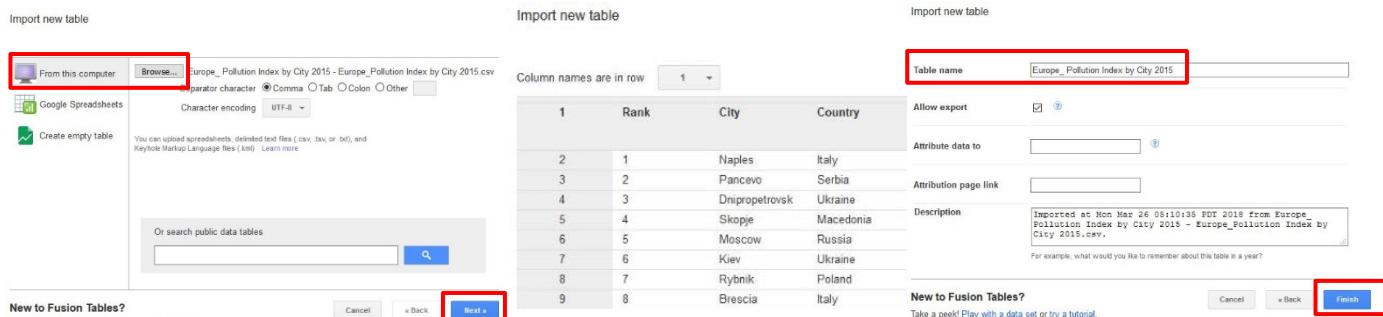


8. From the **Text Import Wizard** in the original data type menu choose delimited to split the data in columns and the row number 1, click next. Now select “**Tab**” and “**Comma**” to separate City and State from each other. Finally choose “**General**” in the column data format and save as .csv file.

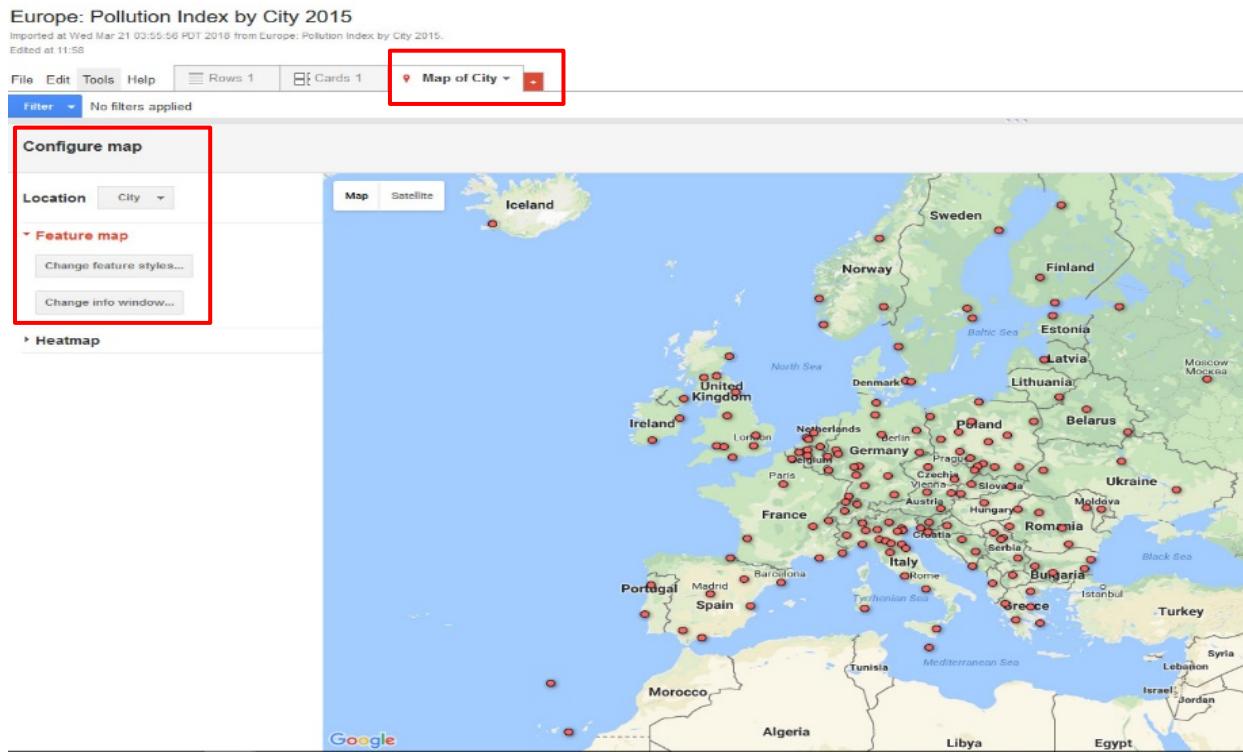


Rank	City	Country	Pollution Index	Exp Pollution Index
1	Naples	Italy	89.22	161.75
2	Pancevo	Serbia	88.97	176.3
3	Dnipropetrovsk	Ukraine	86.55	157.5
4	Skopje	Macedonia	84.82	163.38
5	Moscow	Russia	81.58	147.19
6	Kiev	Ukraine	81.58	148.03
7	Rybnik	Poland	81.38	157.48
8	Brescia	Italy	81.32	149.1
9	Turin	Italy	78.53	147.77
10	Tirana	Albania	76.36	134.6
11	Bucharest	Romania	76.06	134.91
12	Sliema	Malta	75.57	134.32
13	Varna	Bulgaria	75.31	134.94
14	Iasi	Romania	74.35	135.76
15	Milan	Italy	73.52	134.74
16	Saint Petersburg	Russia	73.3	129.1
17	Barcelona	Spain	73.16	129.42
18	Mannheim	Germany	73.13	136.31

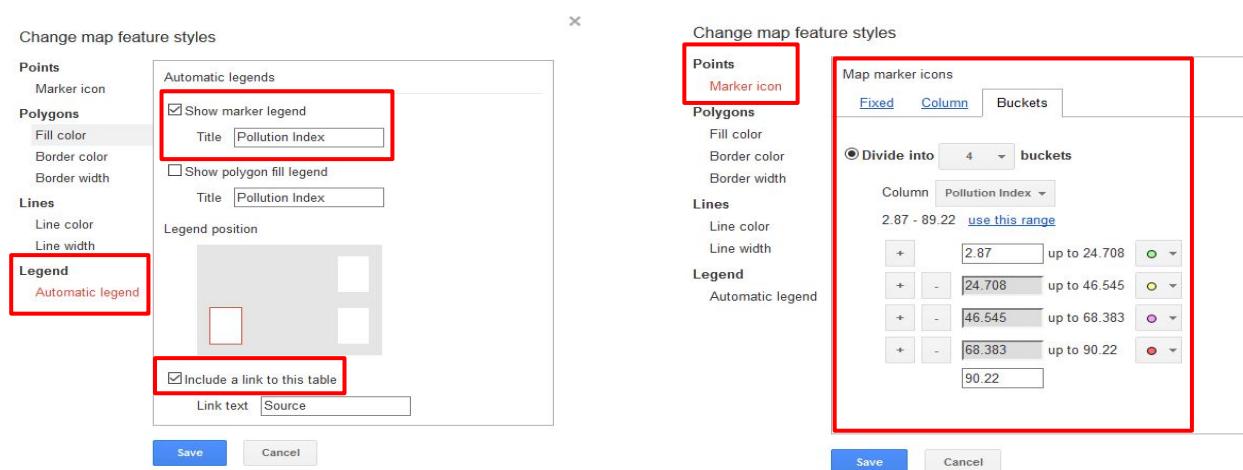
9. Now we are ready to create the **Air pollution Index Map** in *Google Fusion Tables*. In order to import the table from the computer, click [here](#) to choose the file. Choose “**Comma**” as separator character and rename the project.



10. *Google Fusion Tables* can maps data based on three types of geocoding: **Country, Region, City and Coordinates (latitude, longitude)**. The goal of this tutorial is to visualize the air pollution by cities; therefore click on **Map of City** and select from **location “City”**



11. You can easily improve map visualization by using the function “**Change features styles**”. Choose from the variety of styles and colors based on the data available and values of your interest. Categorize the indicators from 1 to 10 groups and change the range of the buckets. For this tutorial select 4 buckets and include the legend in the lower left corner.

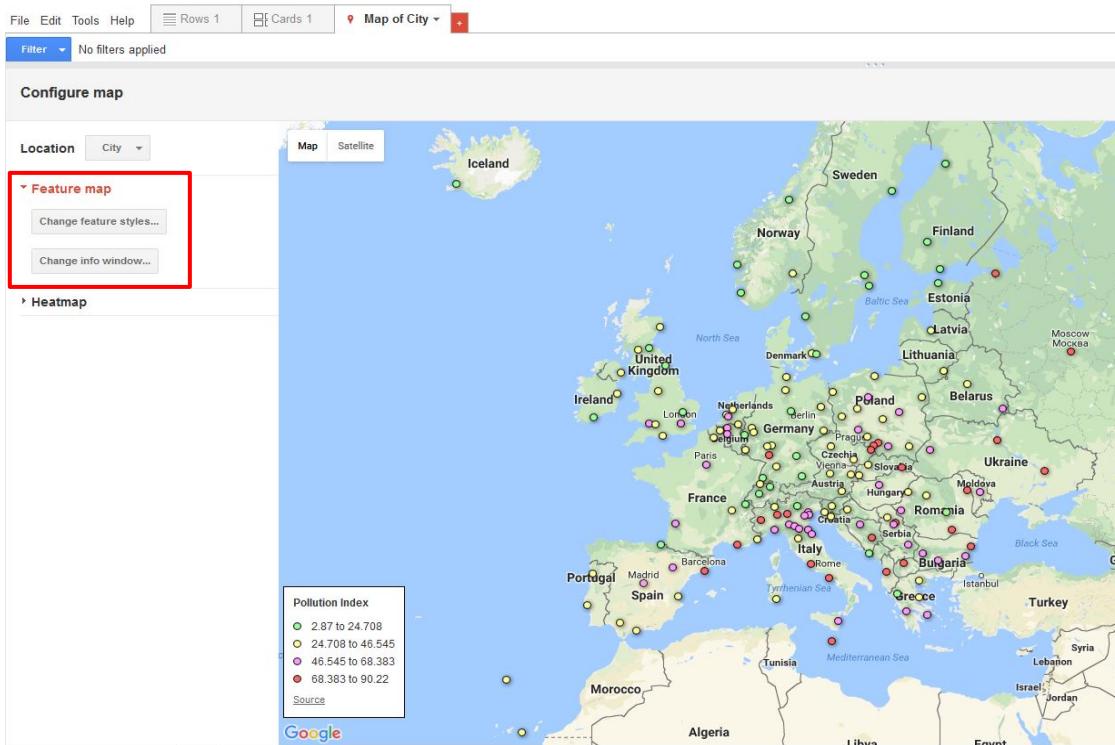


12. The following **maps depict two visualization types available** in *Google Fusion Tables*. The first display the classification of values in 4 groups and the second a cluster “**Heatmap**” as a way of illustrate intensity of air pollution in each country. Heatmaps enable the user to edit the radius, opacity and weight, proving flexibility to the author on how to better represent data for an audience.

### Europe: Pollution Index by City 2015

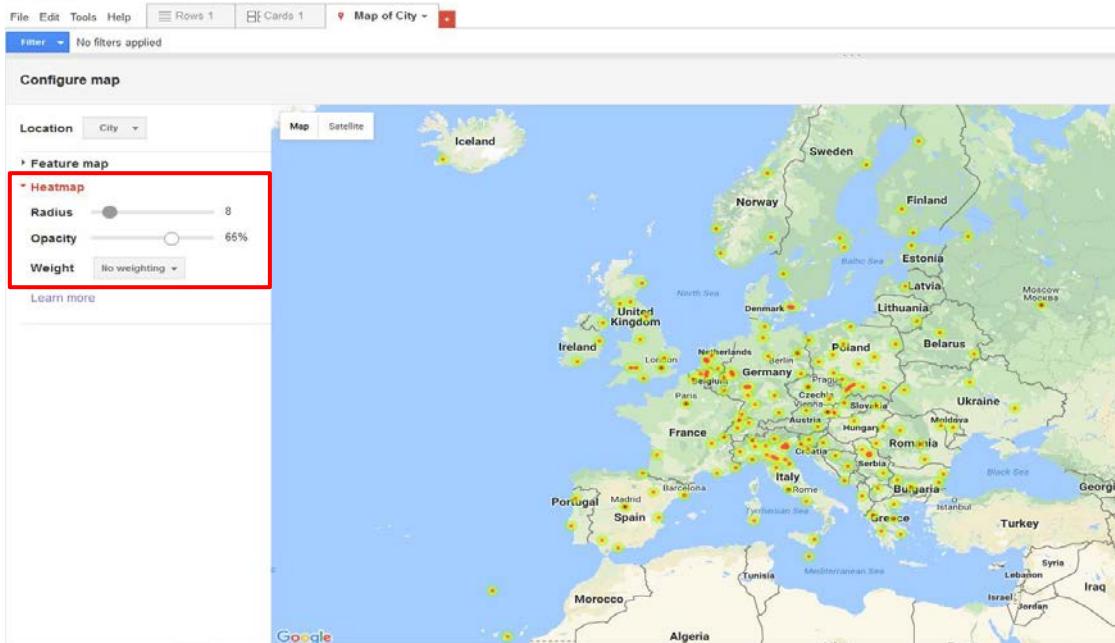
Imported at Wed Mar 21 01:32:08 PDT 2018 from Europe: Pollution Index by City 2015.  
Edited at 09:38

Map style saved.



### Europe: Pollution Index by City 2015

Imported at Wed Mar 21 01:32:08 PDT 2018 from Europe: Pollution Index by City 2015.  
Edited at 09:38



Congratulations!

You have successfully **completed** section #3.2 of the tutorial.



### Goal #3.3: Create maps for any sector using Google Web Tables open data.

- Territory and landscape

The landscape is the manifestation of the human identity in the territory, a result from centuries of the interaction between culture and adaptation to the environmental. The most valuable landscapes in the world are protected and part of the list of UNESCO World Heritage Sites as a common heritage of mankind. In this tutorial we will focus on mapping only the UNESCO World Heritage Sites in Europe.

1. Open Google and make sure you are logged in. In case you need to create a new account click [here](#)
2. Open [Google Web Tables](#) and search “Unesco World Heritage Sites Europe”. From the dropdown list, we will work using option #3 “Table of World Heritage Sites by country”. Click on “show more”, “export data” and “export to google sheets”.

Country	Natural sites	Cultural sites	Mixed sites	UNESCO region
Afghanistan	2			Asia and the Pacific
Albania	2			Europe and North America
Japan	4	15		Asia and the Pacific
Jerusalem (Site)	1			Arab States
Jordan	3	1		Arab States

3. Keep in mind that open data may come with additional information, typos and errors that we need to address before mapping. We are interested in mapping the countries from all Europe. Considering that filtering and cleaning procedures are time consuming we should be flexible when we reach a particular goal, to take advantage of the information available and maximize time efficiency. Saying this, we can see that countries are organized in five UNESCO regions:

- **Asia and the Pacific**
- **Europe and North America**
- **Arab States**
- **Latin America and the Caribbean**
- **Africa**

	Country	Natural sites	Cultural sites	Mixed sites	Total sites	UNESCO region
1	Country					
2	Afghanistan	2			2	Asia and the Pacific
3	Albania	2			2	Europe and North America
4	Algeria	6		1	7	Arab States
5	Andorra	1			1	Europe and North America
6	Argentina	4	4		8	Latin America and the Caribbean
7	Armenia	2		1	3	Europe and North America
8	Australia	12	3	4	19	Asia and the Pacific



4. After careful evaluation to determine an automatic data filtering procedure, the best solution is to map the Europe UNESCO region. To do this, move the mouse cursor to the **F column**, click on the dropdown box and select **sort sheet A – Z**. Now that all countries are organized by regions, we need to delete all except Europe and North America. To perform this task, select the countries that you are not interested, then right click in the ID column number and select delete row. To finalize the editing, manually erase the extra lines that are not countries, including Canada and United States, to map the Europe UNESCO Region with a total of 48 countries. Change the file name to **Tutorial: UNESCO World Heritage Sites Europe**.

Table of World Heritage Sites by country - Wikipedia					
	A	B	C	D	E
22	Bulgaria	2	7		9 Europe and North America
23	Burkina Faso		1		1 Africa
24	Cambodia		2	2	Asia and the Pacific
25	Cameroon	2		2	Africa
26	Canada	9	8	17	Europe and North America
27	Cape Verde		1	1	Africa
28	Central African Republic	1		2	Africa
29	Chad	1		1	Africa

Table of World Heritage Sites by country - Wikipedia					
	A	B	C	D	E
1	Total	197	802	32	1,031 163 Ste
2	Benin		1		1 Africa
3	Botswana		1		1 Africa
4	Burkina Faso			1	1 Africa
5	Cameroon		2		2 Africa
6	Cape Verde			1	1 Africa
7	Central African Republic		1		1 Africa
8	Chad		1		1 Africa
9	Congo			1	1 Africa
10	Côte d'Ivoire	3		1	4 Africa
11	Democratic Republic of the	5			5 Africa
12	Ethiopia		1	8	9 Africa

Table of World Heritage Sites by country - Wikipedia					
	A	B	C	D	E
1	Albania				
2	Albania	2		2	Europe and North America
3	Andorra	1		1	Europe and North America
4	Armenia	2	1	3	Europe and North America
5	Austria	9		9	Europe and North America
6	Azerbaijan	2		2	Europe and North America
7	Belarus	1	3	4	Europe and North America
8	Belgium	11		11	Europe and North America
9	Bosnia and Herzegovina	3		3	Europe and North America
10	Bulgaria	2	7	9	Europe and North America
11	Canada	9	8	17	Europe and North America

Table of World Heritage Sites by country - Wikipedia					
	A	B	C	D	E
1	Country	Natural sites	Cultural sites	Mixed sites	Total sites
2	Albania	2			2 Europe and North America
3	Andorra	1			1 Europe and North America
4	Armenia	2	1	3	Europe and North America
5	Austria	9		9	Europe and North America
6	Azerbaijan	2			2 Europe and North America
7	Belarus	1		3	4 Europe and North America
8	Belgium		11		11 Europe and North America
9	Bosnia and Herzegovina	3			3 Europe and North America
10	Bulgaria	2		7	9 Europe and North America
11	Croatia	1		6	7 Europe and North America
12	Cyprus		3		3 Europe and North America
46	Switzerland	3		8	11 Europe and North America
47	Turkey		13	2	15 Europe and North America
48	Ukraine	1		6	7 Europe and North America
49	United Kingdom	4	24	1	29 Europe and North America

5. The database is ready for *Google Fusion Tables*. To import the table click [here](#). Click on “Map of Country” to visualize the data in the map

Import new table

From this computer

Choose File No file chosen

You can upload spreadsheets, delimited text files (.csv, .tsv or .txt), and Keyhole Markup Language files (.kmz). Learn more

Or search public data tables

New to Fusion Tables?

Take a peek! Play with a data set or try a tutorial

Cancel Next >

UNESCO Heritage Sites Europe Region

Imported at Mon Mar 26 07:56:14 PDT 2018 from Table of World Heritage Sites by country - Wikipedia, ... [more >](#)

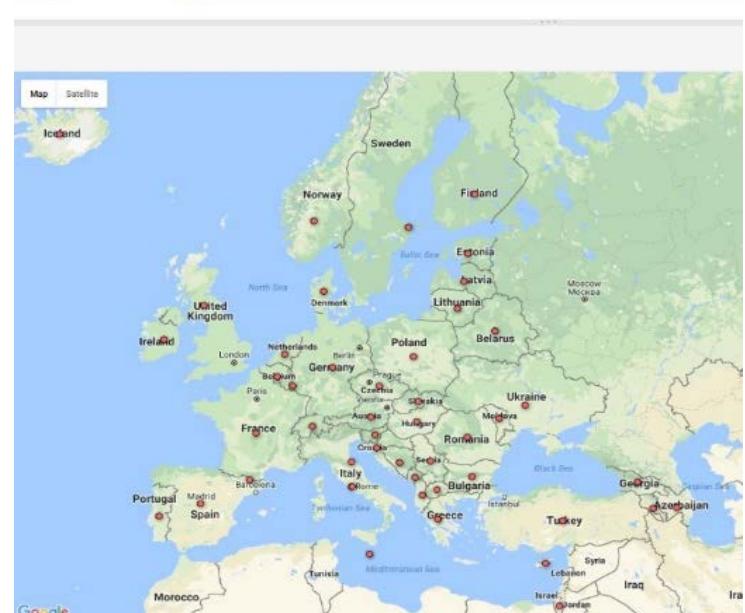
Edited at 16:56

File Edit Tools Help Rows 1 - Cards 1 Map of Country

No filters applied

1-48 of 48

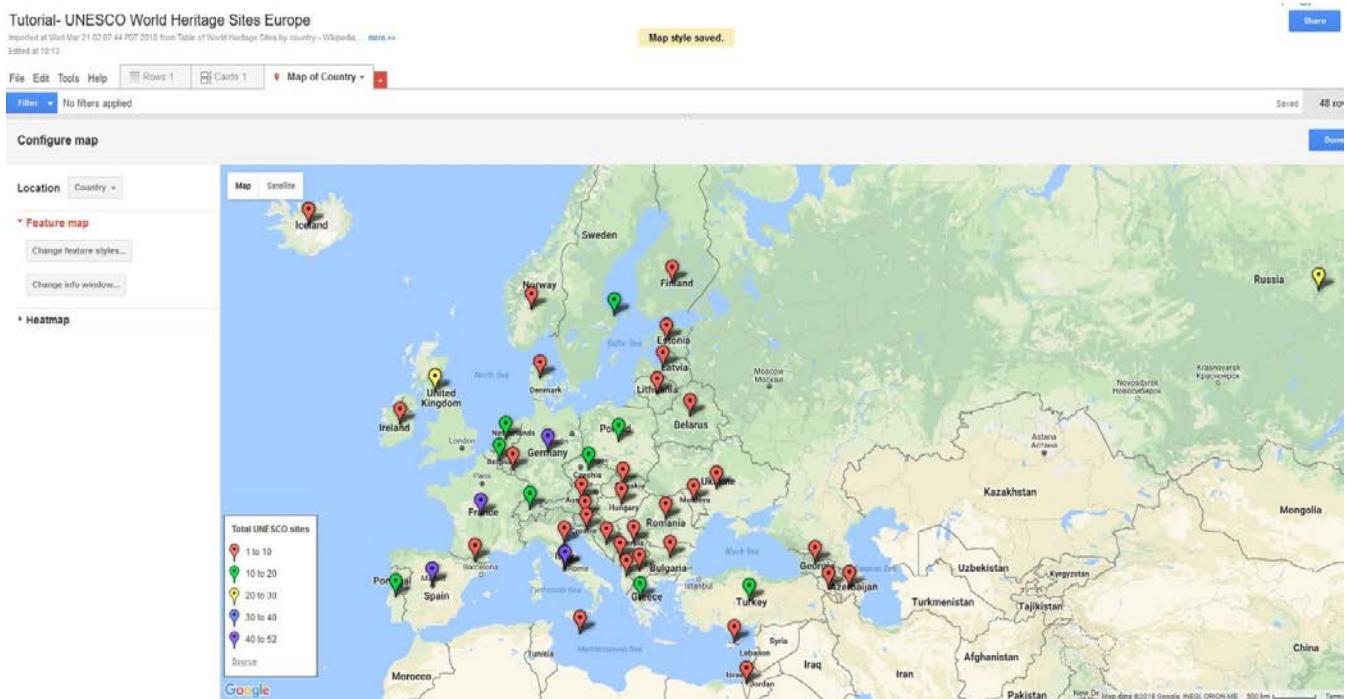
Country	Natur...	Cultur...	Mixed sites	Total sites	UNESCO region
Albania		2		2	Europe and North America
Andorra		1		1	Europe and North America
Armenia		2	1	3	Europe and North America
Austria	9			9	Europe and North America





6. Put your creativity into action to improve the visualization of your map. Change the color and format of features and display the buckets as desired, including the legend.

7. The finished product should look like



Congratulations!

You have successfully **completed** section #3.3 of the tutorial.

## Goal #3.4: Create a point map from a single database using two sets of Google Web Tables open data

- Tourism and cultural heritage

Transport infrastructure and cultural heritage are among key factors for tourism development and management. In this tutorial we will focus on mapping the main airports and art galleries in Europe. First, to separate maps will be created and ultimately merged in order to obtain a single database of European cities that are attractive for tourist because of their accessibility and cultural heritage.

1. Open [Google Web Tables](#) and search “List airport Europe”. From the dropdown list, we will work using **option #1 “List of the busiest airports in Europe”**. Click on “show more”, “export data” and “export to google sheets”.

Rank	2015	Country	Airport	City	Passengers 2014
1	United Kingdom	Heathrow Airport	London	73,405,330	
2	France	Charles de Gaulle	Paris	63,813,756	
3	Turkey	Istanbul Atatürk	Istanbul	56,954,790	
4	Germany	Frankfurt Airport	Frankfurt	59,566,132	
5	Netherlands	Amsterdam Airport	Amsterdam	54,978,023	
6	Spain	Adolfo Suárez Madrid-Barajas	Madrid	41,833,686	
7	Germany	Munich Airport	Munich	39,700,515	
8	Italy	Leonardo da Vinci-Fiumicino	Rome	38,506,908	
9	United Kingdom	London-Gatwick Airport	London	38,103,667	

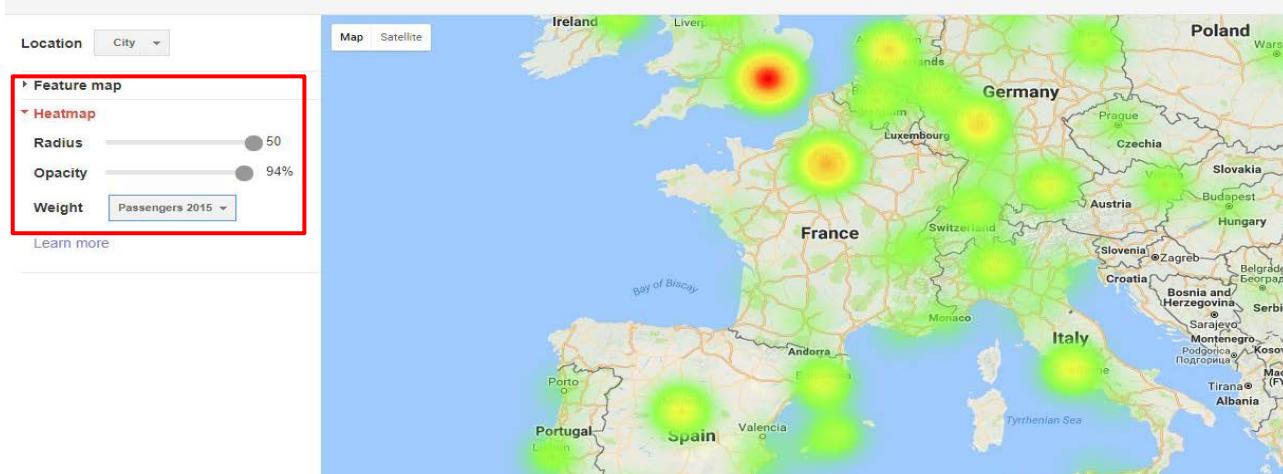
Rank	2015	Country	Airport	City
1	1	United Kingdom	Heathrow Airport	London
2	2	France	Charles de Gaulle Airport	Paris
3	3	Turkey	Istanbul Atatürk Airport	Istanbul
4	4	Germany	Frankfurt Airport	Frankfurt
5	5	Netherlands	Amsterdam Airport Schiphol	Amsterdam
6	6	Spain	Adolfo Suárez Madrid-Barajas Airport	Madrid

2. We can confirm that the data is organized by country, airport and city. As previously mentioned, *Google Fusion Tables* can automatically geocoded any list with this characteristics. Now we are ready to create the **European Airports Map** in *Google Fusion Tables*. In order to import the table from the computer, click [here](#) to choose the file from the *Google Spreadsheets* library. Once the data appears in the screen, click on **Map of City** and select from **location “City”**

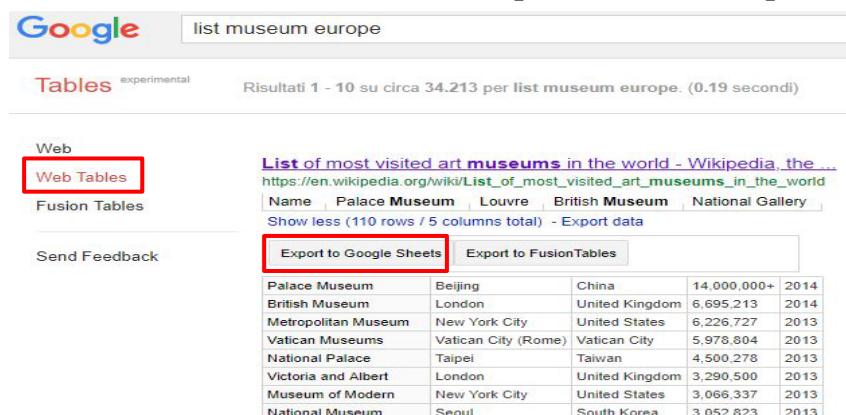
3. Tailor the pop-up window by selecting **change info window**, **change feature styles** as preferred or use the “**Heatmap**” to visualize the concentration of passengers for each airport.



Configure map



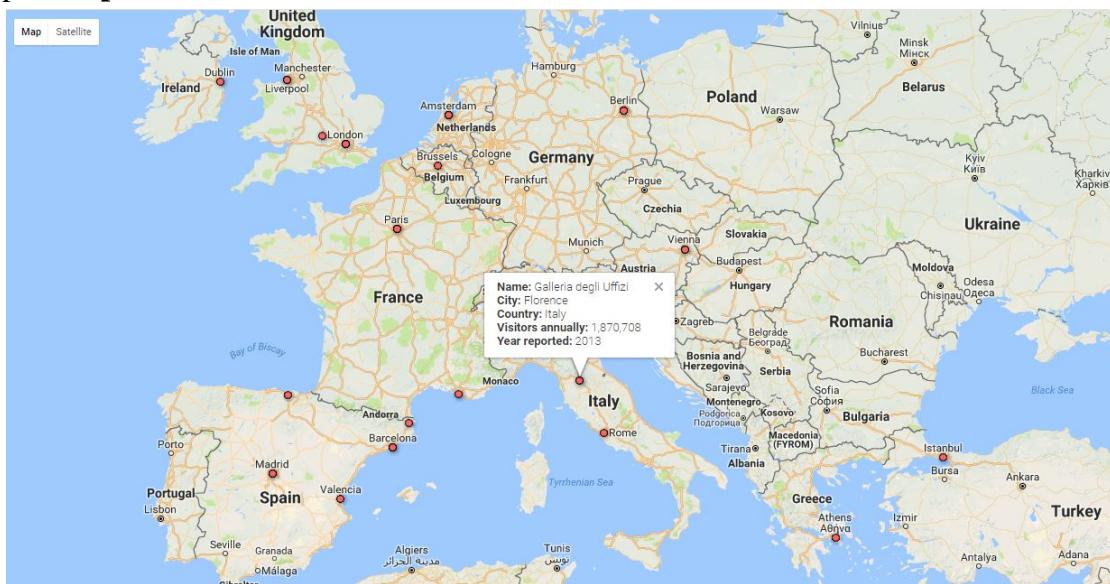
4. We are not done yet. This information needs to be merged with the list of most visited art museum. Integrating both datasets can provide a better understanding of which cities are more appealing to art tourists.
5. Before proceeding with the tutorial, do not close any of the previous tabs you were working earlier. This is important to understand the merge procedure. Open a new [Google Web Table](#) and search “List museums Europe”. From the dropdown list, we will work using **option #1** “List of most visited art museums in the world”. Click on “**show more**”, “**export data**” and “**export to google sheets**”.



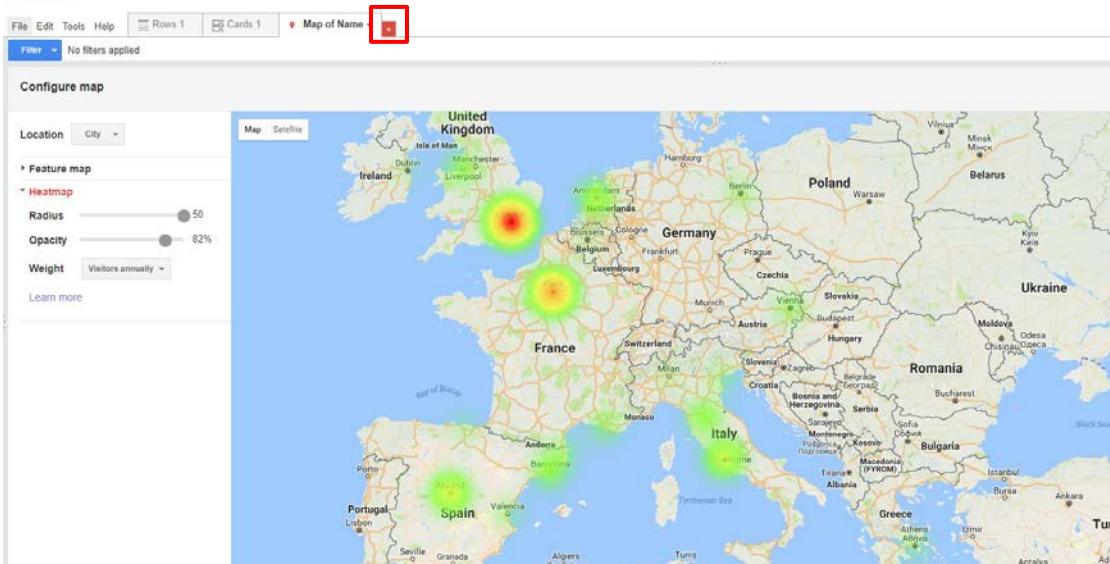
Name	Palace Museum	Beijing	China	14,000,000+	2014
British Museum	London	United Kingdom	6,695,213	2014	
Metropolitan Museum	New York City	United States	6,226,727	2013	
Vatican Museums	Vatican City (Rome)	Vatican City	5,978,804	2013	
National Palace	Taipei	Taiwan	4,500,278	2013	
Victoria and Albert	London	United Kingdom	3,290,500	2013	
Museum of Modern Art	New York City	United States	3,066,337	2013	
National Museum	Seoul	South Korea	3,052,823	2013	



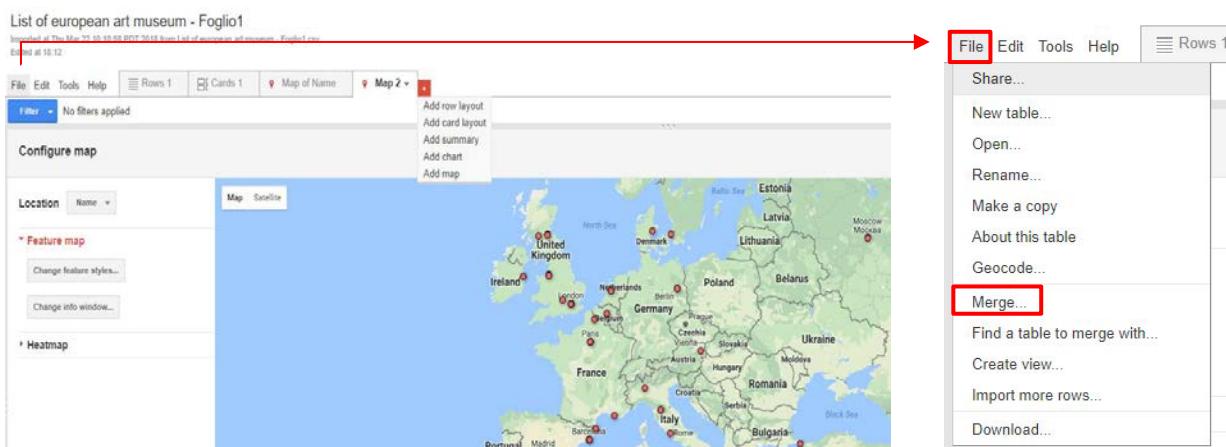
6. Repeat step #2 and #3 to visualize the most visited museums.



List of european art museum - Foglio1  
Imported at Thu Mar 22 10:10:08 PDT 2018 from List of european art museum - Foglio1.csv  
Edited at 10:12



7. To merge both data click on the red cross (+) next to **Map of Name** and select “**Add map**”. Then click on “**file**”, “**merge**” and select the ‘*List of busiest airports*’ that is stored in the Gdrive.



8. To confirm the data association, select for both fields “**City**” and click “**Next**”.

Merge: Confirm source of match

This table	List of european airports
<b>City</b>	<b>City</b>
Barcelona	Belgrade
Liverpool	Malta
Lens	Rhodes
Aarhus	Newcastle upon Tyne
Amsterdam	Stavanger
Milan	Derby / Leicester / Nottingham
Madrid	Nantes
Vienna	Belfast
Oxford	Dalaman
Paris	Trondheim

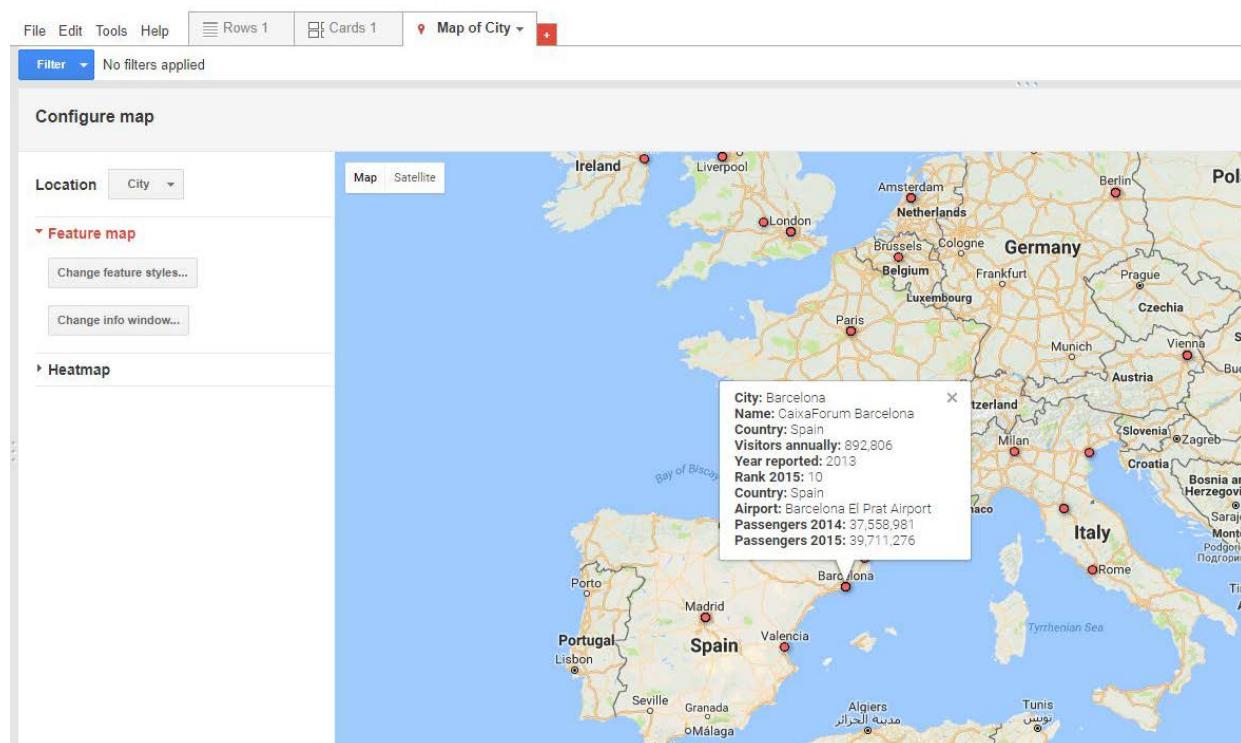
Matching values in these two columns will create the merged table. [Learn more](#)

[Cancel](#) [Previous](#) [Next](#)

9. The new map contains information from both database tables “*List of the busiest airports in Europe*” and “*List of most visited art museums in the world*”.

Merge of List of european art museum - Foglio1 and List of european airports

Edited at 18:27



Congratulations!

You have successfully **completed** section #3.4 of the tutorial.

## Goal #3.5: Create a color map from a single database using Google Web Tables and Google Fusion Tables.

### • Water Resources

Water is an essential element for life, however water accessibility around the world is shaped by differences in wealth, environment and political systems. As a result, is not always accessible to all the population, in particular the gap between developed and developing countries.

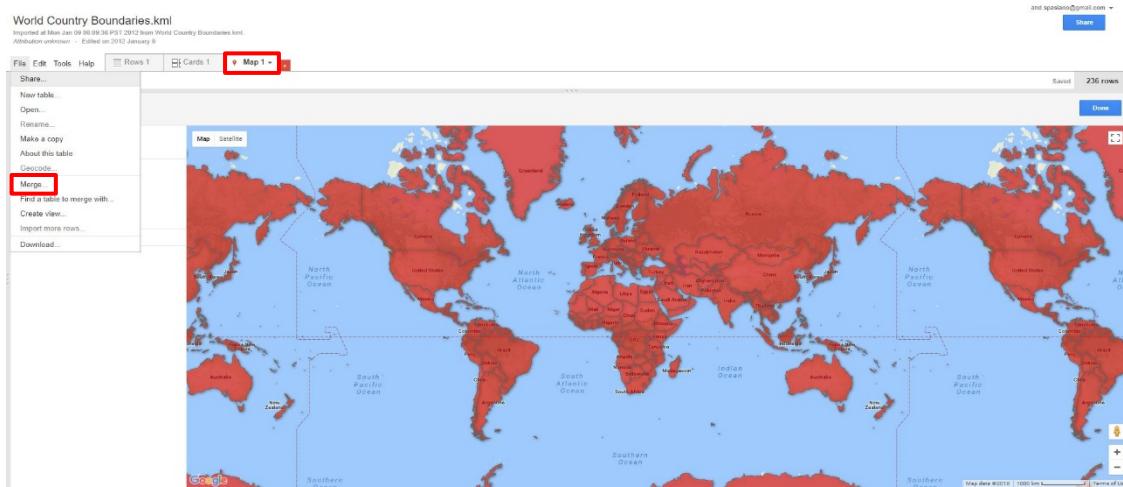
1. Open [Google Web Tables](#) and search “Water accessibility index”. From the dropdown list, we will work using **option #1 “Improved water source (% of population with access)”**. Click on “show more”, “export data” and “export to google sheets”.
2. The data for each country has been found but the file lacks geospatial data. In a **different search window** click on [Google Fusion Tables](#) and type “**“Country Boundaries.kml”**”. From the dropdown list, we will work using **option #3 “World Country Boundaries”**.

Country name	2011	2012	2013	2014
Afghanistan	50	52	53	55
Albania	96	95	95	95
Algeria	85	85	85	84
American Samoa	100	100	100	100
Andorra	100	100	100	100
Angola	48	48	48	49
Antigua and Barbuda	98	98	98	98
Argentina	98	99	99	99
Armenia	99	100	100	100
Aruba	98	98	98	98

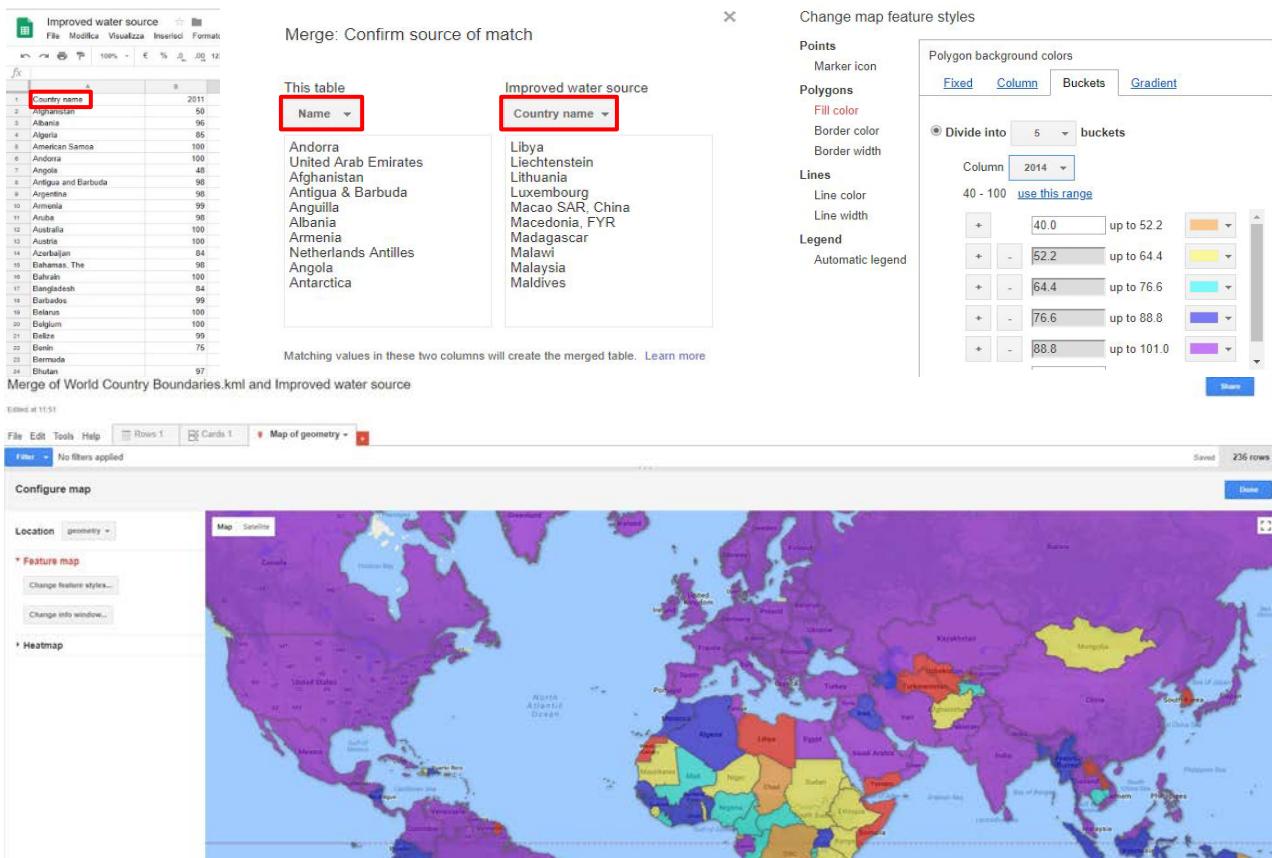
name	geometry_vertex_count	OBJECTID	ISO_2DIGIT
Andorra	5	1	AD
United Arab Emirates	22	2	AE
Afghanistan	71	3	AF
Anguilla	5	4	AG
Angola	5	5	AI

3. Open the file to confirm the table contains geospatial coordinates (kml geometry) of each region are correct. To visualize the color map click on “**Switch to new look**”, located in the upper right corner.

4. Now that you can visualize the full color map of the world, it's time to associate the country geometry file with the water accessibility list. Click on file and merge it with the data stored in the Gdrive.



5. Before proceeding with the merge of both tables, it's important to verify the source of match. In this case, we are interested in merging data for each **country**. Therefore, select from the "World boundaries" table the field "**Name**" and from "Improved water source" list, "**Country name**" respectively. A confirmation message of the new merge table will appear on the screen, click on "**view new table**". Don't forget to tailor the map as desired. The finished product should look like



Congratulations!

You have successfully **completed** section #3.5 of the tutorial.