

# Performing Table Joins

## QGIS Tutorials and Tips



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# Melakukan Join Tabel

Tidak setiap dataset yang anda ingin gunakan sudah berupa shapefile atau sudah dalam format spasial. Seringkali data berupa tabel atau sebuah spreadsheet dan anda ingin menghubungkannya dengan data spasial yang sudah ada untuk anda gunakan dalam analisis. Operasi ini dikenal dengan **Table Join** dan tutorial ini akan menlingkupi bagaimana memperoleh join tabel di QGIS

## Tinjauan Tugas

Kita akan menggunakan sebuah shapefile dari daerah Sensus untuk California dan tabel data populasi dari Biro Sensus Amerika Serikat untuk menghasilkan sebuah peta populasi untuk California.

### *Skill lain yang akan anda pelajari*

- Buat file **.csvt** untuk mengindikasikan tipe data kolom di sebuah file CSV.
- Membuka file CSV yang tidak mempunyai geometri di QGIS.

## Mendapatkan data

US Census Bureau has various spatial extracts from the MAF/TIGER database. You can query and download census tracts shapefile for California. Download [Census Tracts for California](#) file.

Americal FactFinder adalah sebuah repositori dari semua data sensus AS. Anda dapat menggunakan **Advanced Search** dan query untuk **Topic - Total Population** and **Geographies - All Census Tracts in California** dan **Geographies - All Census Tracts in California** untuk menghasilkan sebuah CSV kustom dan mengunduhnya. Tutorial ini menggunakan data **Total Population 2010 Census Summary File 1**.

For convenience, you may directly download a copy of both the datasets from the links below:

[tl\\_2013\\_06\\_tract.zip](#)

[ca\\_tracts\\_pop.csv](#)

Sumber Data [TIGER] [USCENSUS]

## Prosedur

1. Pertama-tama kita akan membuka shapefile census tract. Akses Layer › Add Vector Layer.



2. Browse to the downloaded zip file *t1\_2013\_06\_tract.zip* and select it. QGIS can open zip files directly so no need to uncompress it first.



3. Select the *t1\_2013\_06\_tract.shp* layer and click OK.



4. Anda akan melihat daerah sensus terbuka di QGIS.



5. klik kanan pada layer dan pilih Open Attribute Table.



6. Periksa atribut dari shapefile tracts. Untuk menggabungkan sebuah tabel dan shapefile ini, kita membutuhkan sebuah atribut unik dan sama untuk setiap fitur, field GEOID merupakan pengidentifikasi unik untuk setiap tract dan dapat digunakan untuk **link** shapefile ini dengan tabel lain yang memiliki ID yang sama.

Attribute table - tl\_2013\_06\_tract :: Features total: 8057, filtered: 8057, selected: 0

	STATEFP	COUNTYFP	TRACTCE	GEOID	NAME	NAMESAD	MTFCC
0	06	001	442700	06001442700	4427	Census Tract 44...	G5020
1	06	001	442800	06001442800	4428	Census Tract 44...	G5020
2	06	037	204920	06037204920	2049.20	Census Tract 20...	G5020
3	06	037	205110	06037205110	2051.10	Census Tract 20...	G5020
4	06	037	205120	06037205120	2051.20	Census Tract 20...	G5020
5	06	037	206010	06037206010	2060.10	Census Tract 20...	G5020
6	06	037	206020	06037206020	2060.20	Census Tract 20...	G5020
7	06	037	206050	06037206050	2060.50	Census Tract 20...	G5020
8	06	037	207400	06037207400	2074	Census Tract 20...	G5020
9	06	001	442900	06001442900	4429	Census Tract 44...	G5020
10	06	037	192410	06037192410	1924.10	Census Tract 19...	G5020
11	06	037	192510	06037192510	1925.10	Census Tract 19...	G5020
12	06	037	192520	06037192520	1925.20	Census Tract 19...	G5020
13	06	037	192610	06037192610	1926.10	Census Tract 19...	G5020
14	06	037	192700	06037192700	1927	Census Tract 19...	G5020
15	06	037	194500	06037194500	1945	Census Tract 19...	G5020
16	06	037	195100	06037195100	1951	Census Tract 19...	G5020
17	06	037	195300	06037195300	1953	Census Tract 19...	G5020
18	06	001	443001	06001443001	4430.01	Census Tract 44...	G5020
19	06	001	443002	06001443002	4430.02	Census Tract 44...	G5020
20	06	001	443102	06001443102	4431.02	Census Tract 44...	G5020
21	06	001	443301	06001443301	4433.01	Census Tract 44...	G5020

Show All Features

- Open the CSV file *ca\_tracts\_pop.csv* in a text editor. You will notice that each row of the file contains information about a tract along with the unique identifier we saw in the previous step. Note that this field is called GEO.id2 in the CSV. You will also note that the D001 column has population value for each of the census tract.

```
POPGROUP.id,POPGROUP.display-label,GEO.id,GEO.id2,GEO.display-label,D001
001,Total population,1400000US06001400100,06001400100,"Census Tract 4001, Alameda County, California",2937
001,Total population,1400000US06001400200,06001400200,"Census Tract 4002, Alameda County, California",1974
001,Total population,1400000US06001400300,06001400300,"Census Tract 4003, Alameda County, California",4865
001,Total population,1400000US06001400400,06001400400,"Census Tract 4004, Alameda County, California",3703
001,Total population,1400000US06001400500,06001400500,"Census Tract 4005, Alameda County, California",3517
001,Total population,1400000US06001400600,06001400600,"Census Tract 4006, Alameda County, California",1571
001,Total population,1400000US06001400700,06001400700,"Census Tract 4007, Alameda County, California",4206
001,Total population,1400000US06001400800,06001400800,"Census Tract 4008, Alameda County, California",3594
001,Total population,1400000US06001400900,06001400900,"Census Tract 4009, Alameda County, California",2302
001,Total population,1400000US06001401000,06001401000,"Census Tract 4010, Alameda County, California",5678
001,Total population,1400000US06001401100,06001401100,"Census Tract 4011, Alameda County, California",4156
001,Total population,1400000US06001401200,06001401200,"Census Tract 4012, Alameda County, California",2416
001,Total population,1400000US06001401300,06001401300,"Census Tract 4013, Alameda County, California",3528
001,Total population,1400000US06001401400,06001401400,"Census Tract 4014, Alameda County, California",4314
001,Total population,1400000US06001401500,06001401500,"Census Tract 4015, Alameda County, California",2630
001,Total population,1400000US06001401600,06001401600,"Census Tract 4016, Alameda County, California",2163
001,Total population,1400000US06001401700,06001401700,"Census Tract 4017, Alameda County, California",2667
001,Total population,1400000US06001401800,06001401800,"Census Tract 4018, Alameda County, California",1703
001,Total population,1400000US06001402200,06001402200,"Census Tract 4022, Alameda County, California",2385
001,Total population,1400000US06001402400,06001402400,"Census Tract 4024, Alameda County, California",2351
001,Total population,1400000US06001402500,06001402500,"Census Tract 4025, Alameda County, California",1784
001,Total population,1400000US06001402600,06001402600,"Census Tract 4026, Alameda County, California",1151
001,Total population,1400000US06001402700,06001402700,"Census Tract 4027, Alameda County, California",1569
001,Total population,1400000US06001402800,06001402800,"Census Tract 4028, Alameda County, California",3345
001,Total population,1400000US06001402900,06001402900,"Census Tract 4029, Alameda County, California",1434
001,Total population,1400000US06001403000,06001403000,"Census Tract 4030, Alameda County, California",2788
001,Total population,1400000US06001403100,06001403100,"Census Tract 4031, Alameda County, California",2238
```

8. We could import this csv file without any further action and it would be imported. But, the default type of each column would be a String (text). That is ok except for the **D001** field which contains numbers for the population. Having those imported as text would not allow us to run any mathematical operations on this column. To tell QGIS to import the field as a number, we need to create a **sidecar** file with a **.csvt** extension. This file will have only 1 row specifying data types for each column. Save this file as **ca\_tracts\_pop.csvt** in the same directory as the original **.csv** file. You can also [download the csvt file from here](#).



9. Sekarang kita siap mengimpor file CSV ke QGIS. AKses Layer › Add Delimited Text Layer.





10. Jelajahi folder yang berisi file CSV dan pilih. Pastikan anda telah memilih File format dengan CSV (comma separated values) . Karena kita sedang mengimpor ini sebagai tabel, kita harus merinci bahwa file kita tidak berisi geometri. Pilih opsi No geometry (attribute only table) . Klik OK.

**Create a Layer from a Delimited Text File**

File Name:

Layer name:  Encoding:

File format: ☒ CSV (comma separated values) ☐ Custom delimiters ☐ Regular expression delimiter

Record options: Number of header lines to discard:  ☒ First record has field names

Field options: ☐ Trim fields ☐ Discard empty fields ☐ Decimal separator is comma

Geometry definition: ☐ Point coordinates ☐ Well known text (WKT) ☒ No geometry (attribute only table)

Layer settings: ☐ Use spatial index ☐ Use subset index ☐ Watch file

	POPGROUP.id	POPGROUP.display-label	GEO.id	GEO.id2	GEO.display-label
1	001	Total population	1400000US06001400100	06001400100	Census Tract 4001, Alameda County
2	001	Total population	1400000US06001400200	06001400200	Census Tract 4002, Alameda County
3	001	Total population	1400000US06001400300	06001400300	Census Tract 4003, Alameda County
4	001	Total population	1400000US06001400400	06001400400	Census Tract 4004, Alameda County
5	001	Total population	1400000US06001400500	06001400500	Census Tract 4005, Alameda County

11. File CSV sekarang terimpor sebagai tabel ke QGIS.



12. Select the *tl\_2013\_06\_tract* layer. Right-click on it and select Properties.



13. Pada dialog Layer Properties , pilih tab Joins . Klik tombol + pada bagian bawah untuk membuat sebuah join tabel yang baru.



14. In the Add vector join dialog, select **ca\_tracts\_pop** as the Join layer. Next we have to select the field with unique ids in both the shapefile and the CSV. Select **GEO.id2** and **GEOID** as the Join field and Target field respectively. Click OK.



15. Close the Layer Properties dialog and return to the main QGIS window. At this point, the fields from the CSV file are joined with the shapefile. Right-click on the **tl\_2013\_06\_tract** layer and select Open Attribute Table.



16. Sekarang anda dapat melihat sebuah set field yang baru, termasuk field `ca_tracts_pop_D001` yang ditambahkan pada tiap fitur. Sekarang anda memiliki akses untuk angka populasi untuk setiap tract dari file CSV. Tutup tabel attrtibus dan kembali ke jendela utama QGIS.

Attribute table - tl\_2013\_06\_tract :: Features total: 8057, filtered: 8057, selected: 0

	INTPTLAT	INTPTLON	tracts_pop_POPGRC	op_POPGROURdi	tracts_pop_GEC	pop_GEQdis	ca_tracts_pop_D001
0	+37.5371514	-122.0081094	001	Total population	1400000US06...	Census Tra...	2873
1	+37.5293619	-121.9931002	001	Total population	1400000US06...	Census Tra...	2816
2	+34.0175004	-118.1974975	001	Total population	1400000US06...	Census Tra...	2598
3	+34.0245059	-118.2142985	001	Total population	1400000US06...	Census Tra...	3766
4	+34.0187546	-118.2117956	001	Total population	1400000US06...	Census Tra...	3618
5	+34.0682177	-118.2320356	001	Total population	1400000US06...	Census Tra...	3127
6	+34.0571230	-118.2311021	001	Total population	1400000US06...	Census Tra...	7883
7	+34.0299036	-118.2244531	001	Total population	1400000US06...	Census Tra...	2146
8	+34.0561941	-118.2466502	001	Total population	1400000US06...	Census Tra...	1363
9	+37.5184093	-121.9748369	001	Total population	1400000US06...	Census Tra...	7194
10	+34.0798577	-118.3181008	001	Total population	1400000US06...	Census Tra...	3628
11	+34.0798690	-118.3068568	001	Total population	1400000US06...	Census Tra...	3670
12	+34.0799255	-118.3024972	001	Total population	1400000US06...	Census Tra...	5067
13	+34.0813650	-118.2961539	001	Total population	1400000US06...	Census Tra...	4389
14	+34.0800134	-118.2881064	001	Total population	1400000US06...	Census Tra...	3513
15	+34.0781753	-118.3695958	001	Total population	1400000US06...	Census Tra...	2037
16	+34.1022274	-118.2669741	001	Total population	1400000US06...	Census Tra...	4717
17	+34.0992506	-118.2836893	001	Total population	1400000US06...	Census Tra...	3203
18	+37.5184218	-121.9515237	001	Total population	1400000US06...	Census Tra...	2917
19	+37.5168344	-121.9605916	001	Total population	1400000US06...	Census Tra...	5918
20	+37.5071943	-121.9271475	001	Total population	1400000US06...	Census Tra...	4611
21	+37.4707325	-121.9129556	001	Total population	1400000US06...	Census Tra...	4074

Show All Features

17. Right-click the *tl\_2013\_06\_tract* layer and select Properties.





18. Pilih tab Style . Pilih Graduated dari menu drop-down. Karena kita mencoba untuk membuat sebuah peta populasi, kita ingin menetapkan warna yang berbeda pada tiap daerah sensus. berdasarkan perhitungan populasi. Pilih ca\_tracts\_pop\_D001 sebagai Column . Pilih sebuah daftar warna yang anda sukai dari drop-down Color ramp . Pada Mode , pilih Quantile (Equal Count) . Berikutnya klik Classify . Anda akan melihat sebuah warna yang berbeda sudah ditetapkan dengan interval populasi tertentu. Klik OK.





19. Sekarang anda akan melihat visualisasi dari daerah sensus yang telah melalui perubahan style menggunakan angka populasi. Gunakan tool Zoom in untuk memilih area yang lebih kecil pada layer.



20. Anda mempunyai Peta Populasi California yang detail dan akurat. Anda juga bisa menggunakan teknik yang sama untuk membuat peta berdasarkan variasi data sensus.

