

Nearest Neighbor Analysis

QGIS Tutorials and Tips



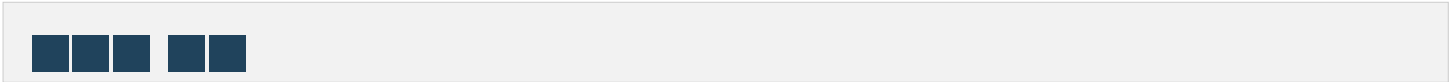
Author




















Ujaval Gandhi

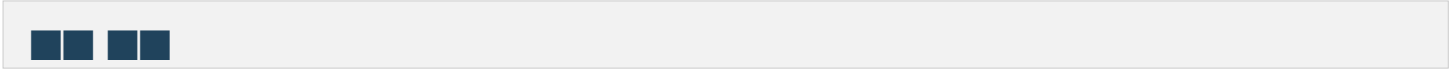
<http://google.com/+UjavalGandhi>

Translations by

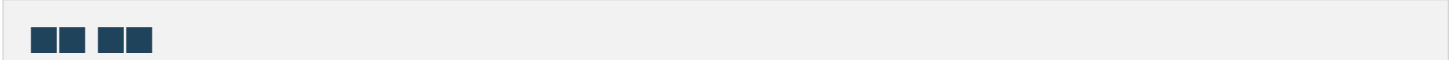
SongHyun Choi



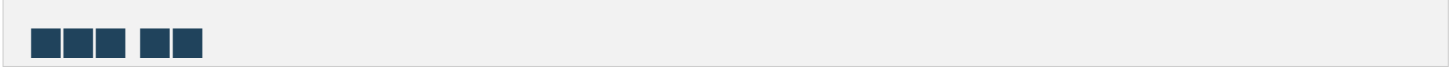






















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DOES hereby certify that the foregoing is a true and correct copy of the original as the same appears in the records of the Department of the Interior.



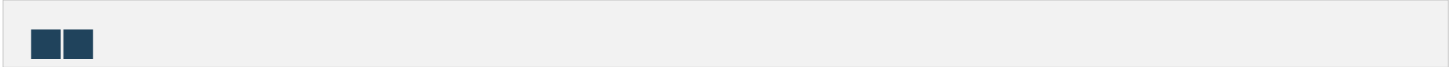
- QGIS 3.16.16 (Lyon) (2023-09-14) (doc: performing_table_joins)



NOAA's National Geophysical Data Center
 Significant Earthquake Database
 tab-delimited earthquake data <[http://www.ngdc.noaa.gov/nndc/struts/results?type_0=Exact&query_0=\\$ID&t=101650&s=](http://www.ngdc.noaa.gov/nndc/struts/results?type_0=Exact&query_0=$ID&t=101650&s=)

Natural Earth
 Populated Places
 simple (less columns) dataset <http://www.naturearthdata.com/http://www.naturearthdata.com/download/10m/cultural/ne_10m_populated_places_simple.zip>

■■■ ■■: [NGDC] [NATURALEARTH]



- ```
1. ##: ## --> ##### ## ## ##...:menuselection: `Layer --> Add Delimited Text
Layer` ## ##### ``signif.txt`` ## ##.
```



2. ■ ■■■■ ■■■■ ■■■■ ■■ \*tab-delimited file\* ■■■■ ■■■■ :guilabel:`File format` ■■ ■■■■■■  
 ■■■■ ■ :guilabel:`Tab` ■ ■■■■■■. X ■■ :guilabel:`X field` ■ Y ■■ :guilabel:`Y field` ■ ■■■■■■  
 ■■■■■■. ■■ :guilabel:`OK` ■ ■■■■■■.

## Note

QGIS ■■■■ ■■■■■■ ■■ ■ ■■■■■■ ■ ■■ ■■■■■■. ■■■■■■ ■■■■ ■■■■■■ ■■■■ ■ ■■  
 ■■■■■■ ■■ ■■■■■■. ■ ■■■■■■ ■■■■ ■ ■■■■■■.

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

File Name:

Layer name:  Encoding:

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

☐ Comma 
 ☒ Tab 
 ☐ Space 
 ☐ Colon 
 ☐ Semicolon

Other delimiters:  Quote:  Escape:

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

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

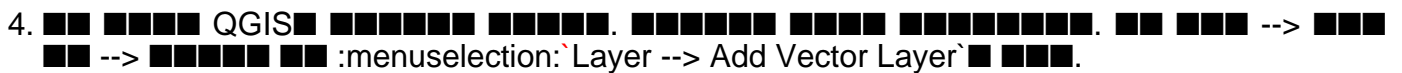
Geometry definition: ☒ Point coordinates ☐ Well known text (WKT) ☐ No geometry (attribute only table)

☒ X field:  Y field:  ☐ DMS coordinates

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

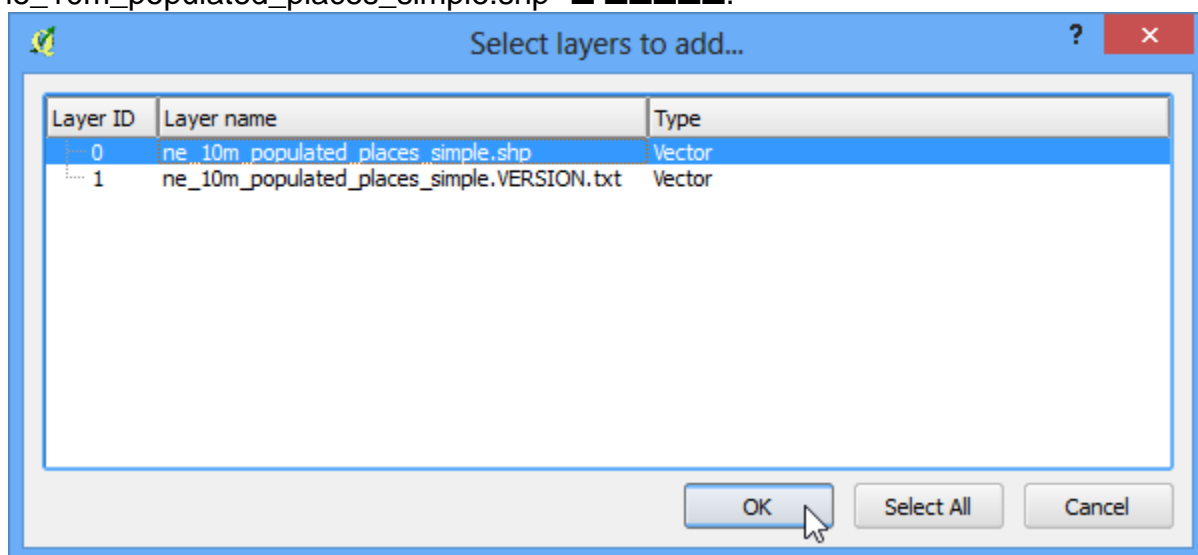
|   | I_D | FLAG_TSUNAMI | YEAR  | MONTH | DAY | HOUR | MINUTE | SECOND | FOCAL_DEPTH | EQ_MAG_MW | EQ_MAG |
|---|-----|--------------|-------|-------|-----|------|--------|--------|-------------|-----------|--------|
| 1 | 1   |              | -2150 |       |     |      |        |        |             |           |        |
| 2 | 2   | Tsu          | -2000 |       |     |      |        |        |             |           |        |
| 3 | 3   |              | -2000 |       |     |      |        |        | 18          |           | 7.1    |
| 4 | 8   |              | -1566 |       |     |      |        |        |             |           |        |
| 5 | 11  |              | -1450 |       |     |      |        |        |             |           |        |

3. **Coordinate Reference System Selector**  
 CRS: WGS 84 EPSG:436





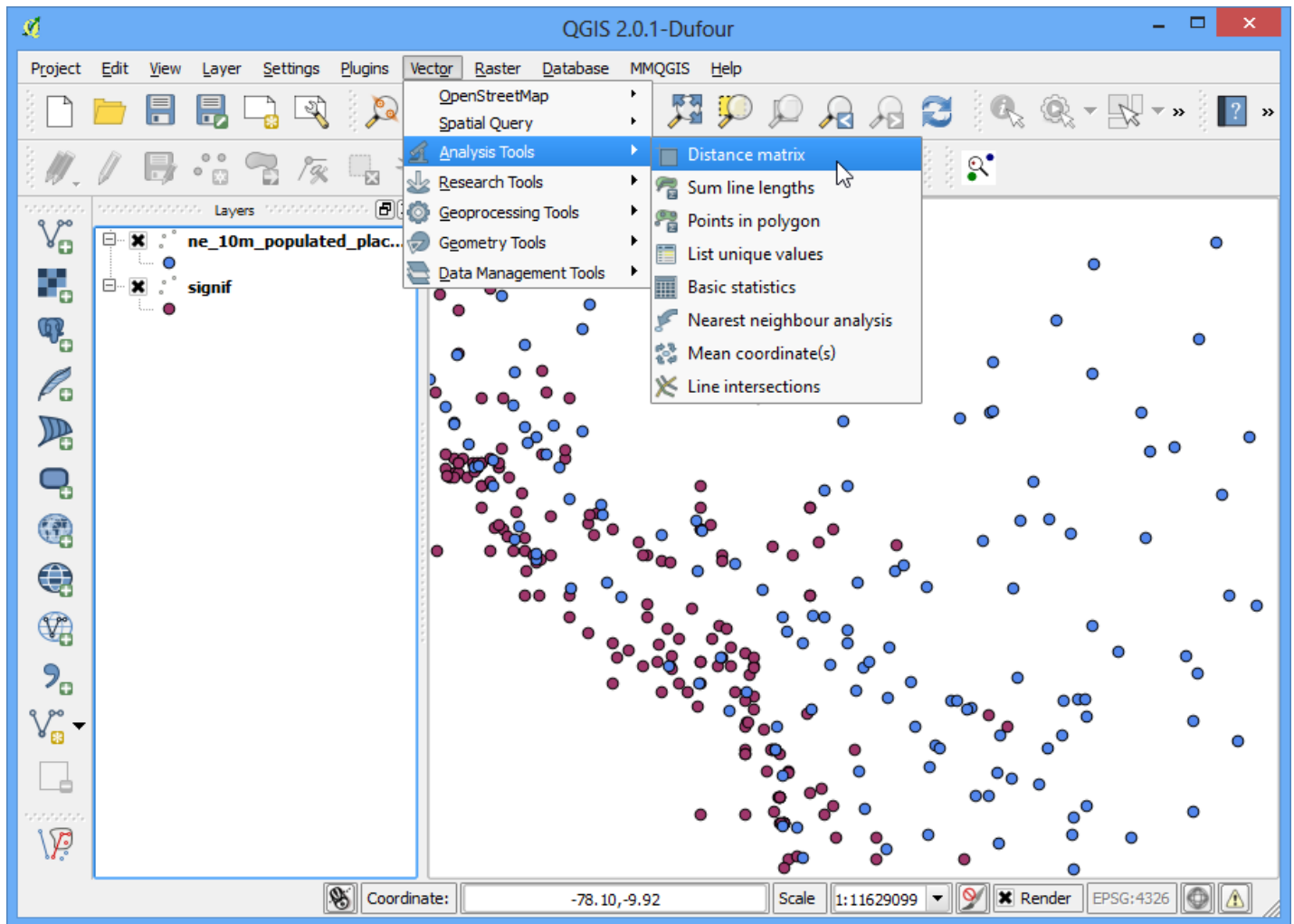
5. `ne_10m_populated_places_simple.zip` :guilabel: Open  
`ne_10m_populated_places_simple.shp` :guilabel: Select layers to add...



6. `ne_10m_populated_places_simple.shp` :guilabel: Open  
`ne_10m_populated_places_simple.VERSION.txt` :guilabel: Select layers to add...



7. ■■■ ■■■ --> ■■■ ■■■ --> ■■■■■■■■■■ :menuselection: `Vector --> Analysis Tools --> Distance Matrix` ■■■■■.



8. Open the 'Distance matrix' tool, select 'ne\_10m\_populated\_places\_simple' as the input layer, and 'signif' as the target layer. Click 'OK' to run the tool. The output will be a CSV file named 'matrix.csv'.

## Note

The 'Distance matrix' tool calculates the distance between each point in the input layer and the nearest point in the target layer. The output is a CSV file containing the results.







10. `matrix.csv` `Geometry definition` `No geometry (attribute only table)` `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

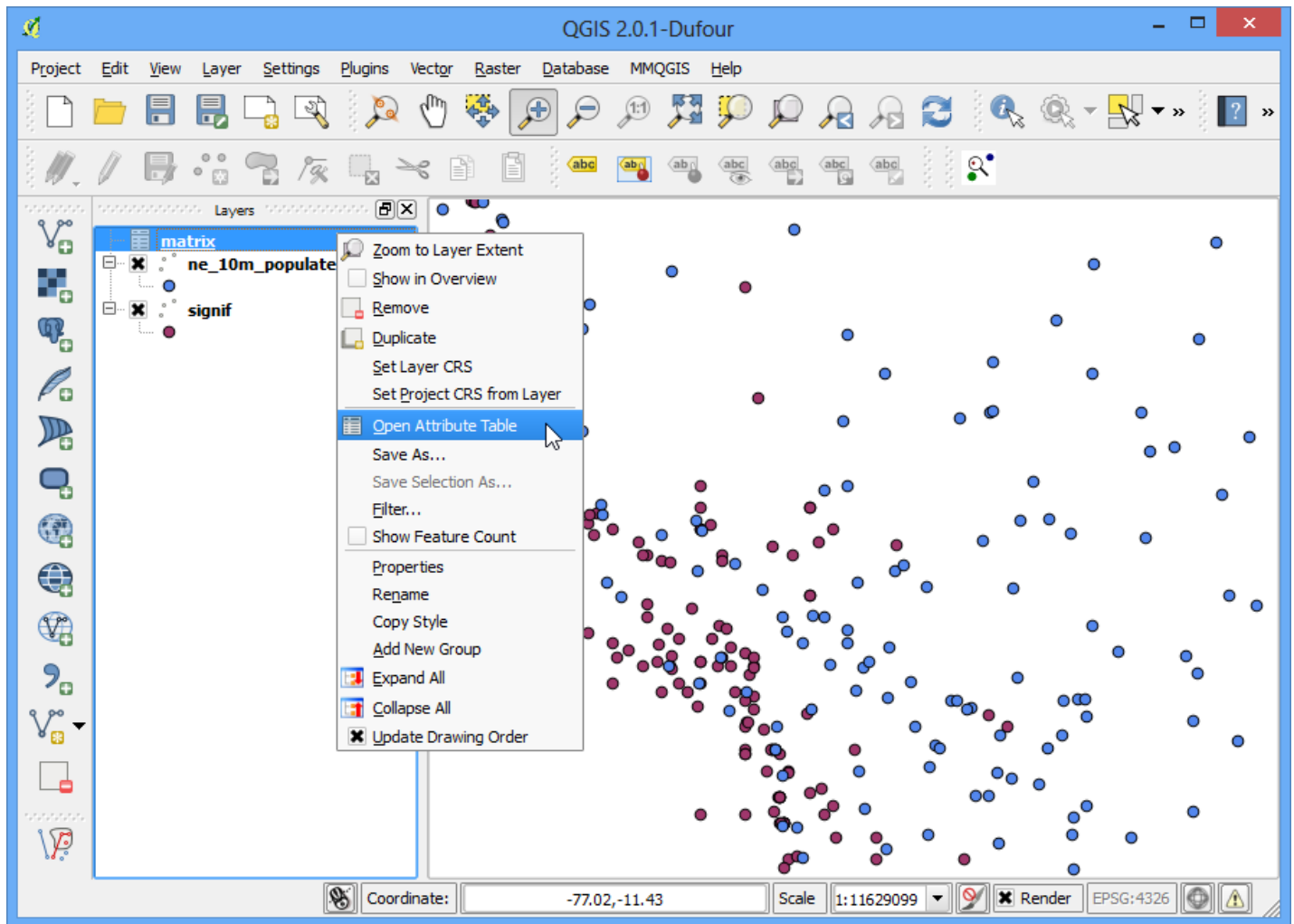
Field options: ☐ Trim fields ☐ Discard empty fields ☐ Decimal separator is comma

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

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

|   | InputID | TargetID      | Distance        |
|---|---------|---------------|-----------------|
| 1 | 1       | Al Karak      | 0.221721171014  |
| 2 | 2       | Al Ladhiqiyah | 0.144408036939  |
| 3 | 3       | Buzmeyin      | 0.0526324624814 |
| 4 | 8       | Al Khalil     | 0.208418004566  |
| 5 | 11      | Iraklio       | 0.408843567409  |
| 6 | 5877    | Iraklio       | 1.1082549107    |

11. ■■■■■ CSV■■■■■ ■■■■ ■■■■. ■■■■ ■■■■ ■■■■■■ ■■■■■■■■ :guilabel:`Open Attribute Table`■■■■■■■.



12. `InputID` `TargetID` `Distance` `2`

### Note

`distance` `degree` `*decimal degrees`

Attribute table - matrix :: Features total: 5727, filtered: 5727, selected: 0

|    | InputID | TargetID          | Distance         |
|----|---------|-------------------|------------------|
| 0  | 1       | Al Karak          | 0.221721171014   |
| 1  | 2       | Al Ladhihiyah     | 0.144408036939   |
| 2  | 3       | Buzmeyin          | 0.0526324624814  |
| 3  | 8       | Al Khalil         | 0.208418004566   |
| 4  | 11      | Iraklio           | 0.408843567409   |
| 5  | 5877    | Iraklio           | 1.1082549107     |
| 6  | 9712    | Al Ladhihiyah     | 0.144408036939   |
| 7  | 12      | As Salt           | 0.230569794451   |
| 8  | 13      | Al Aqabah         | 0.10661139997    |
| 9  | 14      | Al Qunaytirah     | 0.34713470868    |
| 10 | 7793    | Nabatiye et Tahta | 0.256395311798   |
| 11 | 16      | Sparti            | 0.101878534504   |
| 12 | 7794    | Saida             | 0.00326167893321 |
| 13 | 9713    | Piraiévs          | 0.206150410754   |
| 14 | 17      | Volos             | 0.4810609473     |
| 15 | 18      | Sparti            | 0.101878534504   |
| 16 | 5878    | Lamia             | 0.265998307404   |
| 17 | 19      | Varamin           | 0.239101501046   |
| 18 | 20      | Patra             | 0.520403483984   |
| 19 | 21      | Iraklio           | 0.350232618378   |
| 20 | 22      | Kavala            | 1.1152439462     |
| 21 | 9652    | Rajkot            | 0.717056768568   |

Show All Features

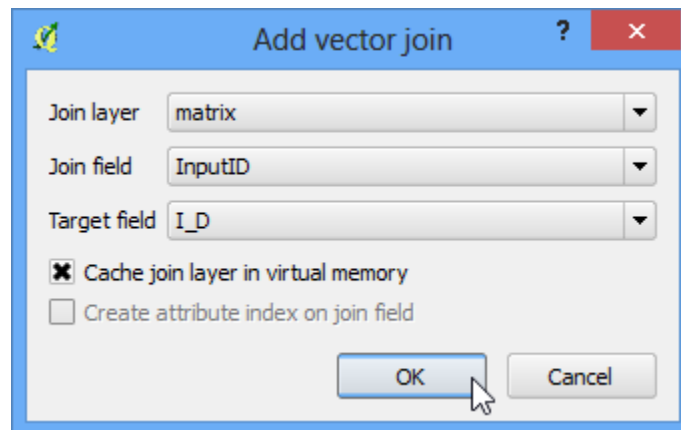
13. **Table Join** **Properties**



14. ■■■ Joins ■■■■ ■■ + ■■■■ ■■■■■■■■.



15. `matrix.csv` is a CSV file containing a matrix of data. The first column contains the names of the variables, and the subsequent columns contain the values for each variable. The data is organized as follows:



16. The 'Joins' tab in the 'Layer Properties' dialog box is used to define the join between the current layer and another layer. The 'OK' button is used to confirm the join settings.



17. ■■■ ■■■■■■ ■■ ■■ ■■■■ ■■■■■■ ■■ ■■■■■■ ■■■ ■■■■■■.





Attribute table - signif :: Features total: 5727, filtered: 5727, selected: 0

|    | DAMAGE_DESCR | L_HOUSES_DESTR | SES_DESTROYED_I | L_HOUSES_DAM | SES_DAMAGED_D | matrix_TargetID   | matrix_Distance  |
|----|--------------|----------------|-----------------|--------------|---------------|-------------------|------------------|
| 0  | NULL         | NULL           | NULL            | NULL         | NULL          | Al Karak          | 0.221721171014   |
| 1  | NULL         | NULL           | NULL            | NULL         | NULL          | Al Ladhiqiyah     | 0.144408036939   |
| 2  | 1            | NULL           | 1               | NULL         | NULL          | Buzmeyin          | 0.0526324624814  |
| 3  | NULL         | NULL           | NULL            | NULL         | NULL          | Al Khalil         | 0.208418004566   |
| 4  | NULL         | NULL           | NULL            | NULL         | NULL          | Iraklio           | 0.408843567409   |
| 5  | 3            | NULL           | NULL            | NULL         | NULL          | Iraklio           | 1.1082549107     |
| 6  | 3            | NULL           | NULL            | NULL         | NULL          | Al Ladhiqiyah     | 0.144408036939   |
| 7  | NULL         | NULL           | NULL            | NULL         | NULL          | As Salt           | 0.230569794451   |
| 8  | NULL         | NULL           | NULL            | NULL         | NULL          | Al Aqabah         | 0.10661139997    |
| 9  | NULL         | NULL           | NULL            | NULL         | NULL          | Al Qunaytirah     | 0.34713470868    |
| 10 | NULL         | NULL           | NULL            | NULL         | NULL          | Nabatiye et Tahta | 0.256395311798   |
| 11 | NULL         | NULL           | NULL            | NULL         | NULL          | Sparti            | 0.101878534504   |
| 12 | NULL         | NULL           | NULL            | NULL         | NULL          | Saida             | 0.00326167893321 |
| 13 | NULL         | NULL           | NULL            | NULL         | NULL          | Piraiévs          | 0.206150410754   |
| 14 | NULL         | NULL           | NULL            | NULL         | NULL          | Volos             | 0.4810609473     |
| 15 | 1            | NULL           | 1               | NULL         | NULL          | Sparti            | 0.101878534504   |
| 16 | 3            | NULL           | 3               | NULL         | NULL          | Lamia             | 0.265998307404   |
| 17 | 3            | NULL           | NULL            | NULL         | NULL          | Varamin           | 0.239101501046   |
| 18 | 3            | NULL           | 3               | NULL         | NULL          | Patra             | 0.520403483984   |
| 19 | 1            | NULL           | NULL            | NULL         | NULL          | Iraklio           | 0.350232618378   |
| 20 | NULL         | NULL           | NULL            | NULL         | NULL          | Kavala            | 1.1152439462     |
| 21 | NULL         | NULL           | NULL            | NULL         | NULL          | Raikot            | 0.717056768568   |

Show All Features