

TAP™ Mapper Data Summation Help

Data Summation is the summation of point data from point-type shapefiles over geographical areas covered by polygon-type shapefiles. The most common Data Summation usage is for conducting population counts wherein the population covered by a tile-type area coverage study is calculated by adding up the population residing within the areas covered by RF signal strength at user defined levels of interest. U.S. block centroid population data for the 2000 and 2010 census are available from SoftWright to facilitate population counts, which are often required for public safety communication systems. In the illustrative example below, a population count is conducted for an area coverage study.

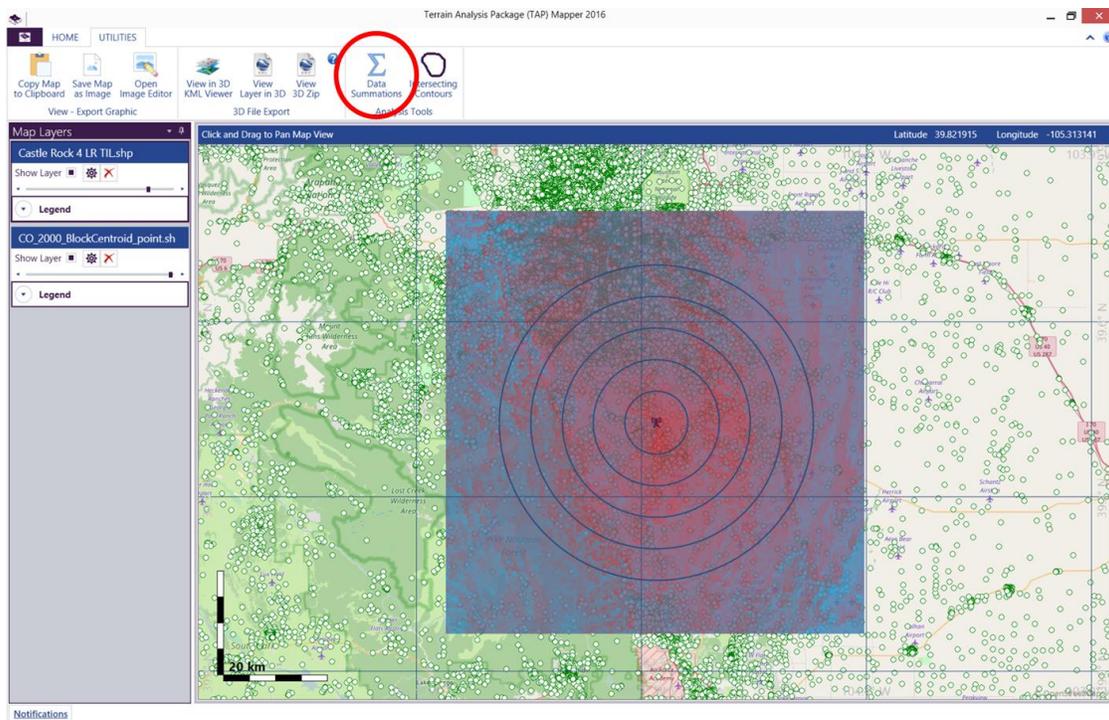


Figure 1: Open Data Summation Dialog from Main Window Utilities Tab

Figure 1 shows a tile coverage study result as the top Mapper layer with signal strength shading from light blue (lower signal strength) to red (higher signal strength) around the transmitter. The second map layer is block centroid population data for Colorado for the 2000 census. It is shown as a green ellipse marker with white fill. The point data could be any point-type shapefile containing numerical data fields. In order to conduct a Data Summation, at least one point-type shapefile and one polygon-type shapefile must be loaded in Mapper. Now that this criteria has been satisfied, launch the Data

Summations dialog by clicking on the summation icon in the Utilities tab of the Main Window as shown in Figure 1.

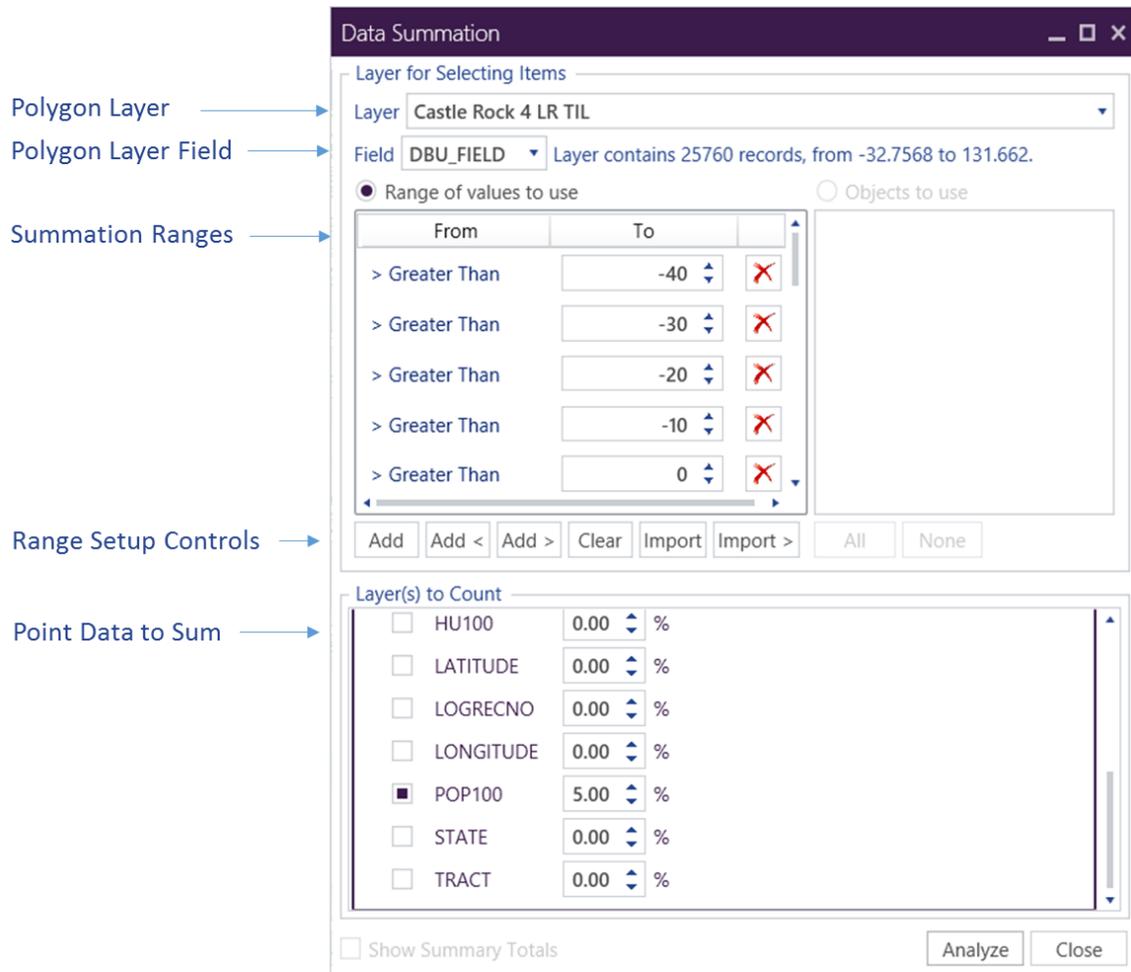


Figure 2: Data Summation Dialog Window

The Data Summation dialog window shown in Figure 2 will appear. Setup the Data Summation using the following steps:

1. Select the polygon layer that covers the geographical area of interest. As shown, this is a tile area coverage study from TAP.
2. Select the data field of interest from the dropdown list containing all data fields for the shapefile. As shown, this is the field strength data for the coverage study (DBU_FIELD).
3. If the data field is numerical, create all desired summation ranges using the range setup controls as described below:

- a. **Add**: Creates a bounded range that will contain polygon areas where the data value (e.g., DBU_FIELD) is between an upper and lower bound (e.g., $-30 < \text{DBU_FIELD} < -10$),
 - b. **Add <**: Creates a one-sided range that will contain polygon areas where the data value is less than the user-entered threshold (e.g., $\text{DBU_FIELD} < -10$).
 - c. **Add >**: Creates a one-sided range that will contain polygon areas where the data value is greater than the user-entered threshold (e.g., $\text{DBU_FIELD} > -10$).
 - d. **Clear**: Clears the entire set of data ranges.
 - e. **Import**: If a Value Range style is set for display of the chosen polygon layer, as it is in this example, selecting Import will copy the data ranges from the Value Range style into the Data Summation ranges.
 - f. **Import >**: Similar to Import except that the lower end of the Value Range style data ranges is used to create a set of one-sided “greater than” Data Summation Ranges. This was used in the example shown in Figure 2. Each data range is greater than the lower end of a corresponding range from the Value Range style.
4. Select the point data to sum by clicking the box beside the data fields of interest from the point-type shapefile(s). More than one data field may be selected. In Figure 2, the population data is contained in a field named POP100. The percentage shown is to make the report easier to read by collating/combining the results for all Summation Ranges below the selected percentage. In this example, 5% has been selected.

Press the “Analyze” button and a report will be created that sums the point data over the appropriate polygon areas for every point data field selected. In this example, the report will show the total population covered by each field strength category as defined in the Summation Ranges. Progress information will be displayed while the Data Summation report is generated, which may take a minute or two for large studies.

As shown in Figure 3, the Data Summation Report has a table that shows the point data (in this example, the population from the 2000 census) for each Summation Range while collating all results below 5% in the first row of the table. The same information is displayed graphically in a bar chart format as shown in Figure 4. The results may be interpreted as, for example, “1,372,543 people are covered by greater than 30 dBu field strength, which is 83.89% of the total population of 1,636,159 for this coverage study”. These metrics are often critically important for public safety communication systems. Select the “Open in Document Editor” button to open the report in a word processing application from which the report may be printed or saved in a variety of common formats (e.g., .doc, .pdf).

For additional information or to initiate a support request, please send an email to support@softwright.com.

Data Summation Results

11/28/2016 11:01:43 AM

Search Layer: C:\Users\Public\Documents\SWTAP6\MAPPING\MAP FILES\CASTLE ROCK 4 LR TIL\Castle Rock 4 LR TIL

Search Field: DBU_FIELD = 25760 Records [-32.7568 to 131.662]

Filter	Sum	%	Field	Layer
> -40	1636159	100.00 %	POP100	CO_2000_BlockCentroid_point.shp
> -30	1636159	100.00 %	POP100	CO_2000_BlockCentroid_point.shp
> -20	1636159	100.00 %	POP100	CO_2000_BlockCentroid_point.shp
> -10	1635557	99.96 %	POP100	CO_2000_BlockCentroid_point.shp
> 0	1630598	99.66 %	POP100	CO_2000_BlockCentroid_point.shp
> 10	1622229	99.15 %	POP100	CO_2000_BlockCentroid_point.shp
> 20	1582265	96.71 %	POP100	CO_2000_BlockCentroid_point.shp
> 30	1372543	83.89 %	POP100	CO_2000_BlockCentroid_point.shp
> 40	856444	52.34 %	POP100	CO_2000_BlockCentroid_point.shp
> 50	335566	20.51 %	POP100	CO_2000_BlockCentroid_point.shp
> 60	60902	3.72 %	POP100	CO_2000_BlockCentroid_point.shp
> 70	18451	1.13 %	POP100	CO_2000_BlockCentroid_point.shp
> 80	4140	0.25 %	POP100	CO_2000_BlockCentroid_point.shp
> 90	206	0.01 %	POP100	CO_2000_BlockCentroid_point.shp
> 100	194	0.01 %	POP100	CO_2000_BlockCentroid_point.shp
> 110	194	0.01 %	POP100	CO_2000_BlockCentroid_point.shp
> 120	194	0.01 %	POP100	CO_2000_BlockCentroid_point.shp
> 130	194	0.01 %	POP100	CO_2000_BlockCentroid_point.shp
Subtotal	1636159			

Close

Figure 3: Data Summation Report Table

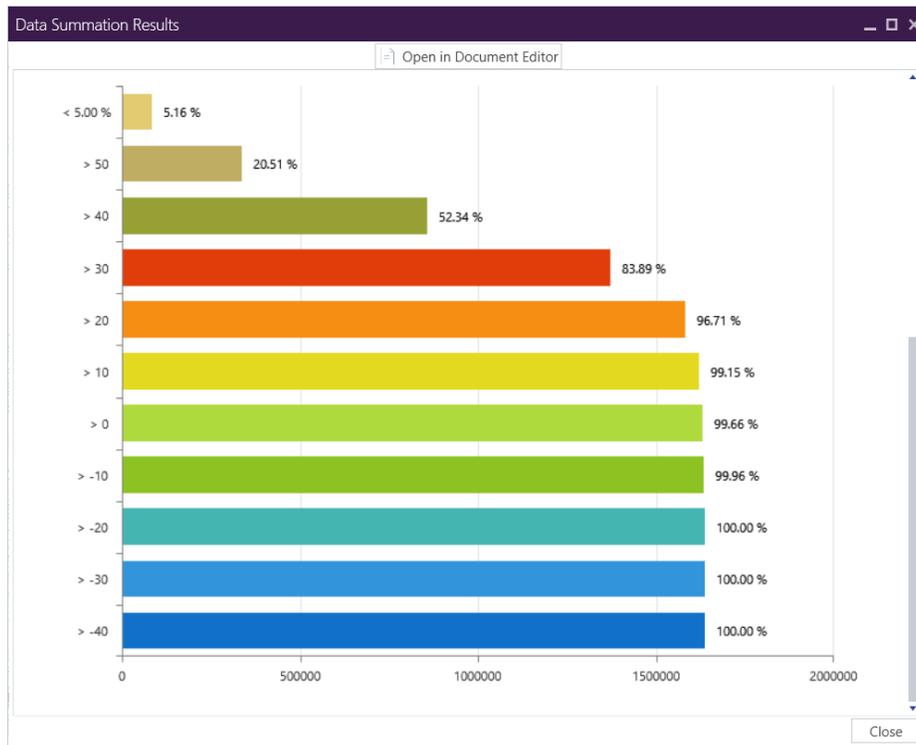


Figure 4: Data Summation Report Chart