New York State Department of Transportation
Accident Location Information System
ALIS
Query–Reporting–Analysis
Statistical Filter
When to use the Statistical Filter

- The Statistical Filter provides a method of identifying a “Hot Spot” along a given corridor, Segment, or among a group of Spots (Intersections).
- The output of a Statistical Filter query will contain both the identified High Accident Location segments or Intersections as well as the individual crashes associated with those locations.
The Statistical Filter is available in these 4 query types.

- Corridor (linear)
- Sliding (linear)
- Spot/Intersection/Cluster (Point)
- Strip (linear)
The first option in a statistical Filter type query is to set the minimum number of accidents. In this scenario, only segment 3 meets the minimum number of accidents threshold of 5 crashes. Your results will contain just this segment and those 8 crashes on the segment.
Intersection 1
6 crashes

Search Radius:
10 Meters is an “official”
intersection crash

Intersection 2
4 crashes

Intersection 3
6 crashes

Using this Minimum Number of Accidents
setting, your results would include Intersections
1 and 3 with the associated crashes.
The second option in a statistical filter type query is to select a method to calculate the minimum percent of accidents. This option allows the user to select a type of crash that may be overrepresented at a particular segment or intersection.

By default, the option for “None” is selected. In this case, just the minimum number of accidents threshold set in the previous step will be used to filter out segments.
When the “Manually” method to calculate the minimum % of accidents is selected, an entry box appears that allows you to select a value from 1%–99%. This value represents the threshold of a certain type of crash, which the user selects on the accident or vehicle parameter tabs, as a percent of the total number of crashes found on that segment or within the Spot radius.

In this example, if the user selects “Collision with Pedestrian” as the Accident Type and sets the minimum number % Accidents to 10%, the results would contain those segments of your selected road or intersections that meet the minimum number of crashes criteria and where 10% or more of all the crashes on the segment or within the spot radius are “Collision with Pedestrian” crashes.
Using a comparison Area

The second option for calculating the minimum percent of accidents is to use the “Factor from the Comparison Area” method. The user can create several different types of comparison areas including polygons, municipal boundaries or specific streets. The application queries the comparison area to create a set of statistics on the number and type of crashes in the comparison area polygon or on the comparison area segments or at intersections. It then analyzes your study area segments or spots and compares them to the statistics computed from the comparison area.

The results of a query using the statistical filter is a set of locations (segments or intersections) that meet the threshold and filtering parameters the user set up.
When using the “Factor from the comparison area” method, the user enters a “Factor” value. If the crash data for a segment or Intersection exceeds the average calculated from the comparison area by this entered factor, the segment or intersection will be included in the result set.

In this example, the user has entered a factor of 1.05. If there was an average of 10 crashes per segment in the comparison area, your results would contain segments from the study area that have 11.5 crashes or more per segment.
There are 4 options for defining the Comparison area to be used for the statistical filter query.

The first 3 options allow the user to define a polygon on the map:
- Same as Study Area
- Add from Map Selection
- Select from boundaries

The option to set the comparison area as “Same as Study area” is selected by default.

The 4th option allows the user to define specific streets to be used as the comparison area. This option is somewhat complex to set up but adds considerable value to the sliding scale analysis.
Selecting a “Normalization Method” will normalize the results of the comparison area analysis so it can be compared to your study area results on an “Apples to Apples” basis.

In this example, your study area is being used as the comparison area. Let’s say you are looking for “Hot Spots” of pedestrian crashes along your selected street segment. The analysis determines that there are 10 pedestrian crashes out of a total of 100 crashes found in the comparison area and on your selected segment lengths there are a total of 10 crashes and 3 of them are pedestrian crashes. The normalization method will create a percentage for each so they can be compared. The average number of pedestrian crashes would be 10% and on one segment of your selected street the percentage is 30%. The analysis will then check if 30% is greater than the 10% multiplied by the Factor of the calculated average entered.
In order to use a Street selection as the comparison area, you will need to skip ahead to the next tab and create a street selection. Leave the “Comparison Area” set to the default of “Same as Study Area” for now and click the “Next” button to continue to the Street Selection Tab.
Use one or more of the four methods of selecting streets to define the comparison area streets.

Verify your selections here. If there are no records in this box, you have not selected any streets. After verifying the comparison area street selection, click the “Back” button to return to the comparison area selection function and update your comparison area.
Select the “Same as street selection” option and confirm the update by clicking “OK”.

Click the “Next” button again to proceed to the street Selection tab.
The user now has two options for this type of query. The first option is to continue with the selected streets. In this case, the averages from the comparison area that will be computed will be based on the same street selection that will be analyzed for segments that exceed the average.

The second option is to delete the selected streets on this Street selection tab and select a completely different set of streets to be analyzed. The averages from the comparison area will continue to be based on the original selection.
Here, the “selected Streets” have been deleted and a new selection was made. The different selections can be viewed on the map. Comparison Area streets are in green and Selected Streets to be analyzed are blue.

Study Area segment
Blue Line

Comparison Area segment
Green Line