TRANSPORTATION SYSTEM

TRANSPORTATION SAFETY AND SECURITY

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

CONNECT SoCal

APPENDIX 1 OF 2
SAN BERNARDINO INSTRUCTIONS

ADOPTED ON SEPTEMBER 3, 2020

CONNECT SoCal

TECHNICAL REPORT

TRANSPORTATION SAFETY AND SECURITY APPENDIX 1 OF 2

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APPENDIX 1 OF 2

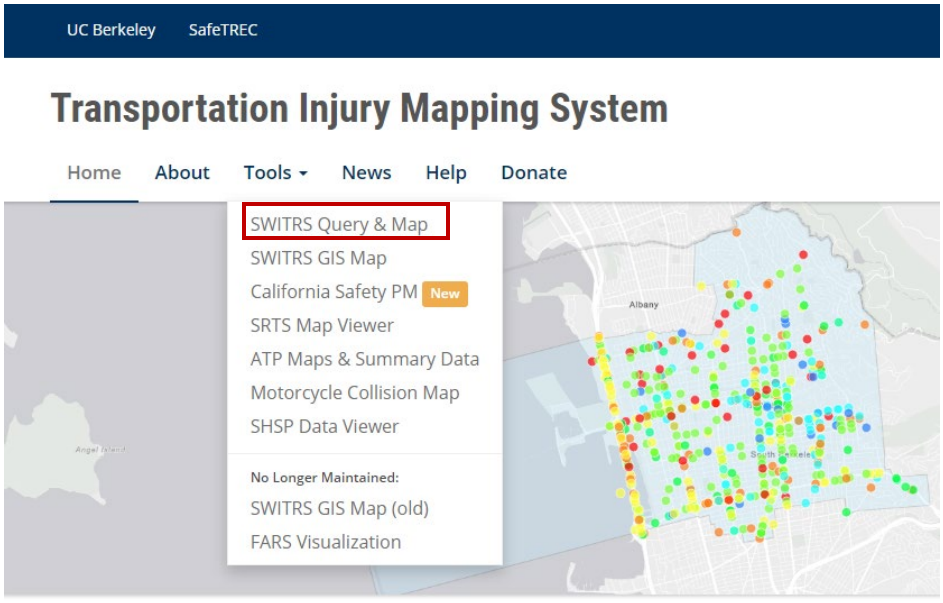
San Bernardino Instructions

SAN BERNARDINO INSTRUCTIONS

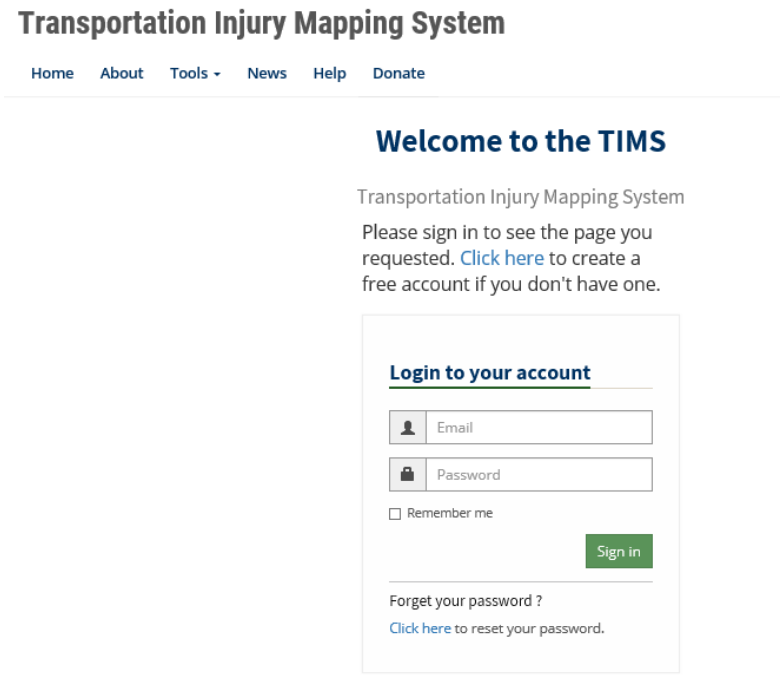
The following instructions were created using ArcMap 10.5.1.

PART ONE: GATHER DATA

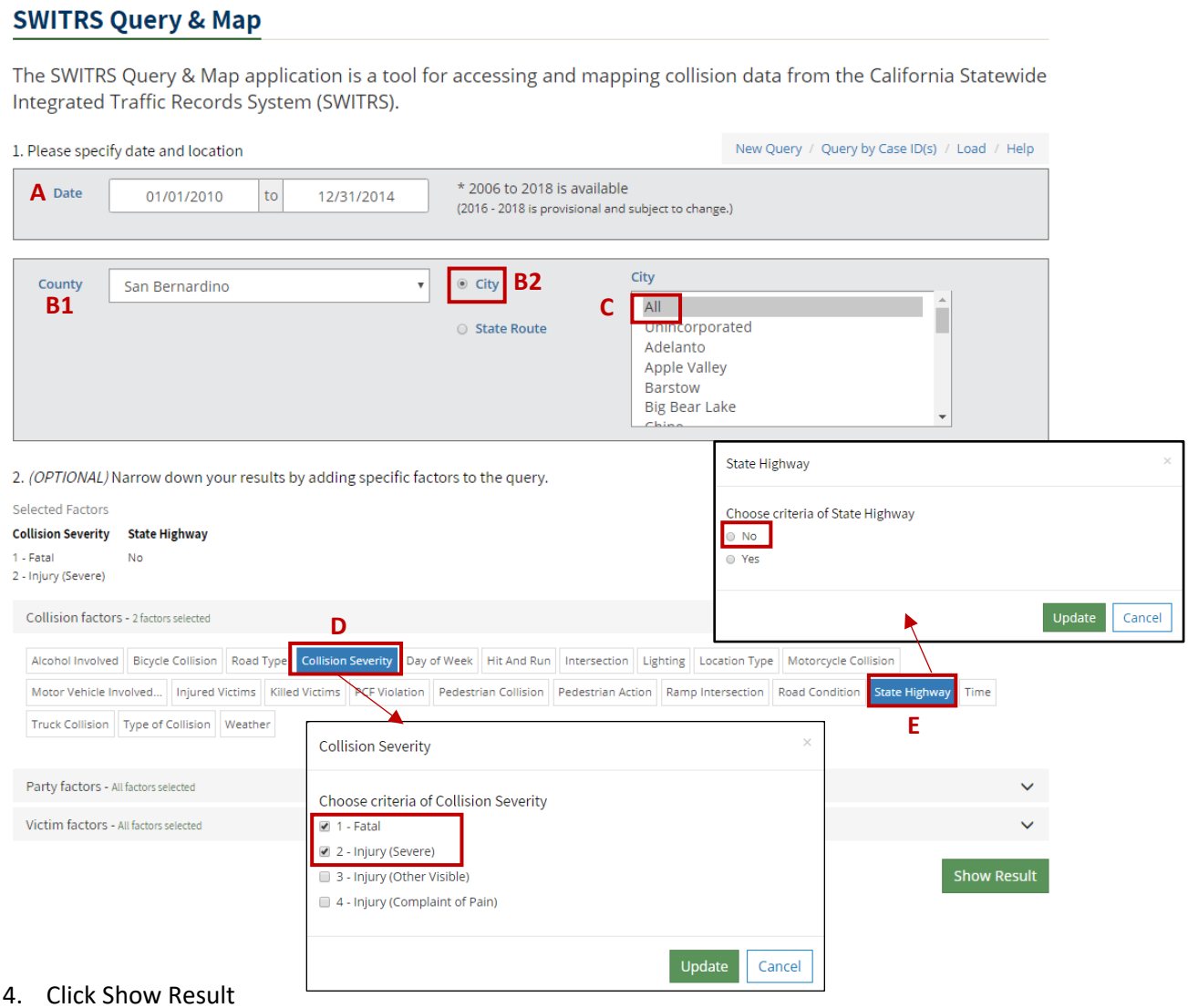
1. Acquire the latest Transportation Injury Mapping System (TIMS) data. Visit https://tims.berkeley.edu/ and select “SWITRS Query & Map.”



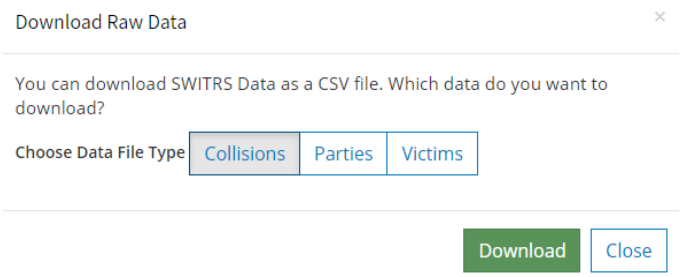
2. Login or create an account to access the data.



3. Select the desired data the user would like to analyze. For this exercise on Fatal and Serious Injuries (FSI), select the following attributes:
    a. Specify the **Date** to range from **01/01/2010** to **12/31/2014**
    b. Select the County to be **San Bernardino** at the **City** level
    c. Select **All** under the City subcategory
    d. Filter **Collision factors** to only include incidents where the **Collision Severity** criteria is either **1 – Fatal** or **2 – Injury (Severe)**
    e. Filter **State Highway** to only include incidents that did not occur on a State Highway

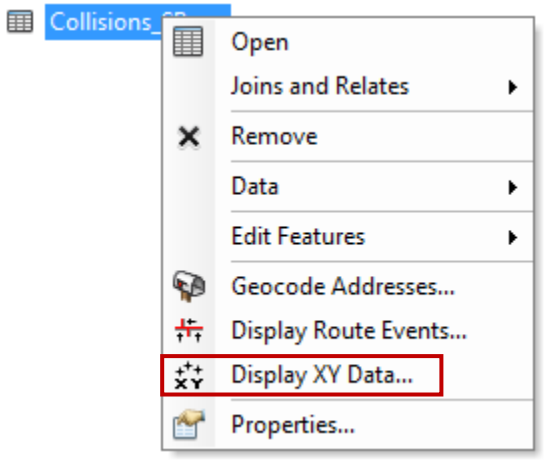


4. Click Show Result
5. On the **Result Summary** page, click the **Download** button and select **Collisions** as the Data File Type.

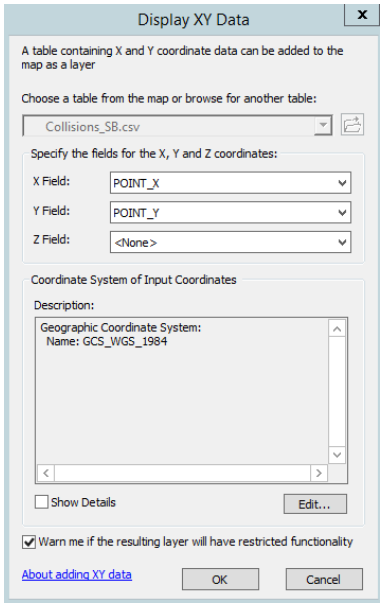


PART TWO: UPLOADING DATA

1. Open ArcMap and upload the street line shapefile available on the user's servers.
    a. SCAG will use a street line shapefile informed by TomTom for instructional purposes.
2. Load the Collision CSV file to ArcMap.
3. Right click the Collision CSV file and select **Display XY Data**.



4. Assign the X Field and Y Field to **POINT_X** and **POINT_Y** respectively. Assign the Geographic Coordinate System to GCS_WGS_1984



5. Export the Collisions events to the project folder or geodatabase.

PART THREE: PREPARE STREET DATA

SOURCE: SCAG TomTom street network

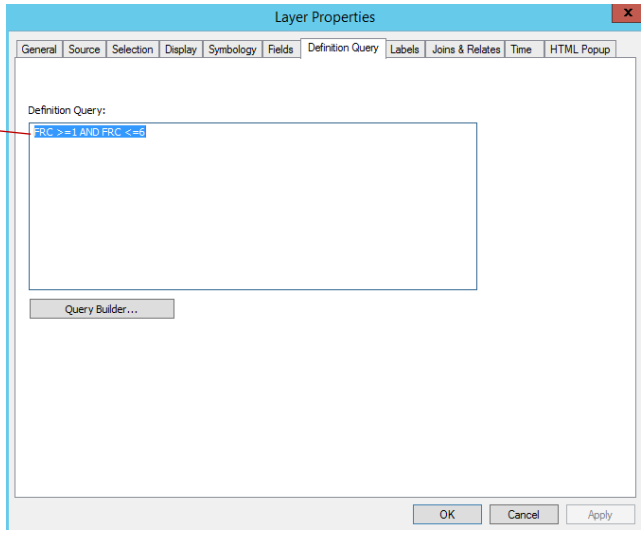
Use the Functional Road Classification (FRC) to filter the street line shapefile (TomTom) to only represent the local roads.

FRC

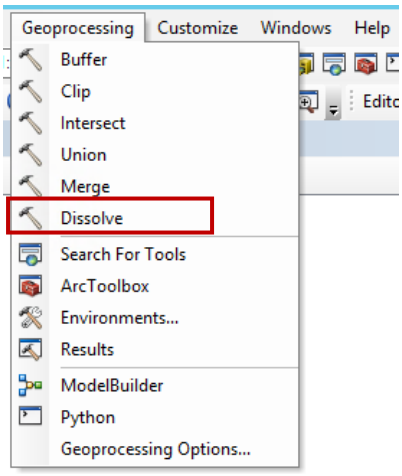
0: Motorway, Freeway, or Other Major Road (highway)
1: A Major Road Less Important than a Motorway (highway)
2: Other Major Road (highway)
3: Secondary Road (arterial)
4: Local Connecting Road (Local)
5: Local Road of High Importance (Local)
6: Local Road (Local)
7: Local Road of Minor Importance (Local)
8: Other Road (Local)

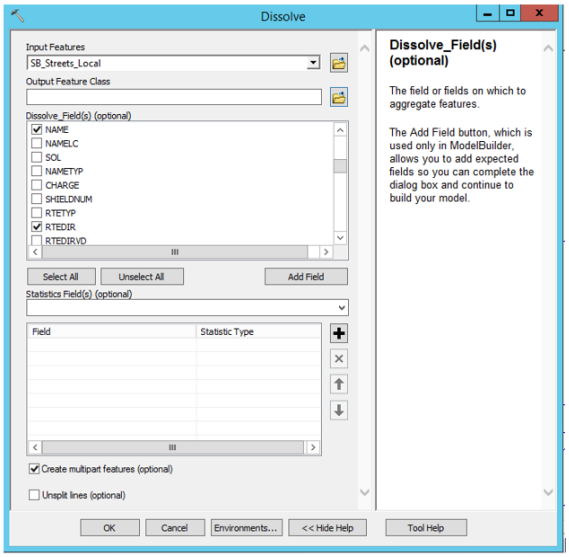
1. Open Layer Properties to execute a **definition query** which will select local roads (i.e.: FRC that ranges from 1 to 6). Export the shapefile/data to the project folder or geodatabase.

FRC >=1 AND FRC<=6

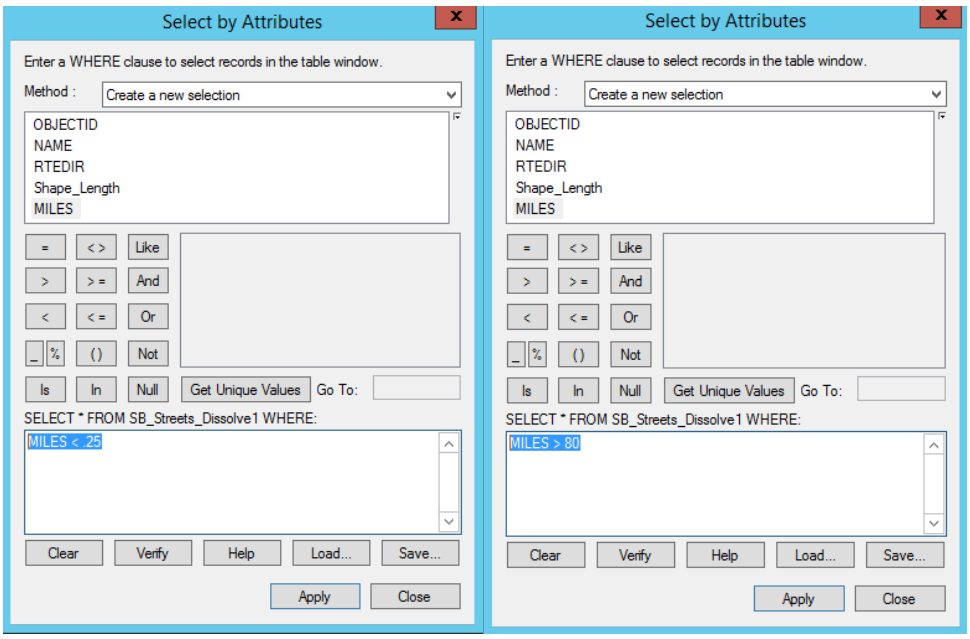


2. Dissolve the local road shapefile by street name and street direction. For example, the TomTom data SCAG used for this process have the attributes **NAME** and **RTEDIR**.





3. Create a new field ("MILES") in the dissolved street shapefile. Execute **Calculate Geometry** to determine the length of each polyline in Miles US.
    a. **Select By Attributes** polylines with a distance less than one quarter (.25) mile in length. Delete highlighted selection.
    b. **Select By Attributes** polylines with a distance more than eighty (80) miles in length. Delete highlighted selection.



4. Execute python script to break the remaining streets into 0. 5 mile segments.

```
>>> in_fc='P:\Ariel
Pepper\GIS\Safety\Safety.gdb\SB_Streets_Dissolve_deleted'
```

```
>>> out_fc=arcpy.CreateFeatureclass_management("P:\Ariel
Pepper\GIS\Safety\Safety.gdb", "cams_long_split", "POLYLINE",
spatial_reference=in_fc)
>>> global feat
>>> feat = []
>>> for row in arcpy.SearchCursor(in_fc):
...     line = row.shape
...     out_count = row.getValue("SplitNumber")
...     feat.append([line.segmentAlongLine(i/float(out_count),
((i+1)/float(out_count)), True) for i in range(0, out_count)])
...     print row.getValue("NAME")
...     arcpy.CopyFeatures_management([item for sublist in
feat item in sublist],out_fc)
...
```

PART FOUR: PREPARE COLLISION DATA

The TIMS fatal and severe injury (FSI) data will be analyzed by four collision-type groupings: 1) Automobile-Automobile, 2) Automobile-Bicycle, 3) Automobile-Pedestrian, and 4) All Collisions.

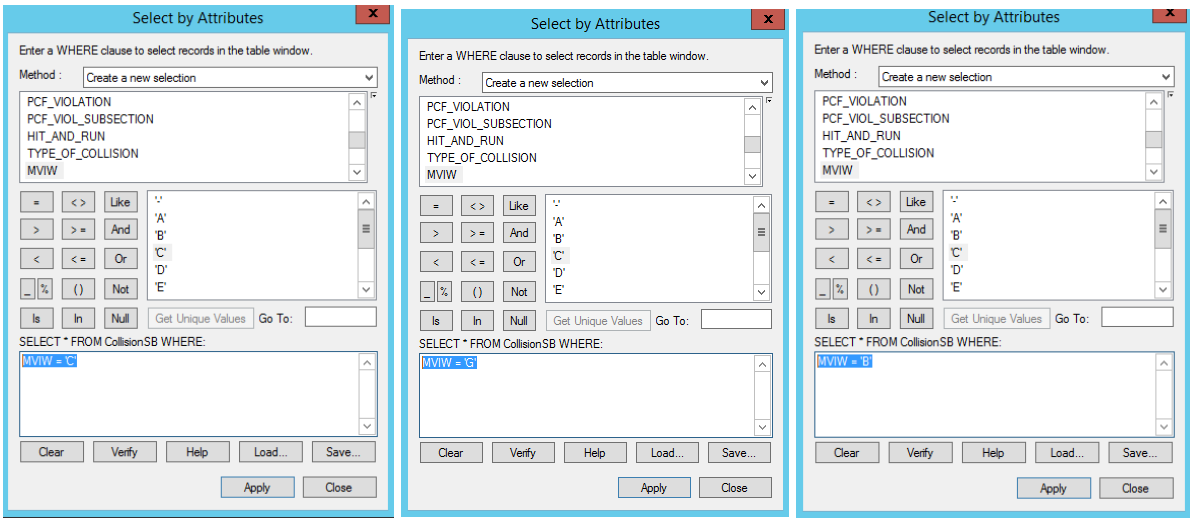
The collision types will be determined by filtering the **Motor Vehicle Involved With (MVIW)** attribute.

MVIW

A - Non-Collision
B - Pedestrian
C - Other Motor Vehicle
D - Motor Vehicle on Other Roadway
E - Parked Motor Vehicle
F - Train
G - Bicycle
H - Animal
I - Fixed Object
J - Other Object
- - Not Stated

More information regarding the attribute table can be found in the TIMS Codebook.

1. Open the TIMS shapefile and write the following in the **Select By Attributes** window for each group. Export the selected attributes to the project folder and add exported data to the map as a layer.
    a. *Automobile-Automobile*: MVIW = 'C'
    b. *Automobile-Bicycle:* MVIW = 'G'
    c. *Automobile-Pedestrian:* MVIW = 'B'
    d. *All Fatal and Serious Injury Collisions:* [No filter]



PART FIVE: ASSIGN COLLISION (POINT) TO STREET (LINE)

Analysis – Near

- Use near to identify *All Fatal and Serious Injury Collisions* near the street
- Use near to identify *Automobile-Automobile* near the street
- Use near to identify *Automobile-Pedestrian* near the street
- Use near to identify *Automobile-Bicycle* near the street

PART SIX: JOIN NEAR TABLE TO STREET TABLE

- Join the near table for *All Fatal and Serious Injury Collisions* to street table to identify number of collisions per mile
- Join the near table for *Automobile-Automobile* to street table to identify number of collisions per mile
- Join the near table for *Automobile-Pedestrian* to street table to identify number of collisions per mile
- Join the near table for *Automobile-Bicycle* to street table to identify number of collisions per mile

PART SEVEN: USE SYMBOLOGY TO IDENTIFY 65% COLLISIONS

2. 20 equal classifications
3. Reverse sorting
4. Capture 65% collisions

<u>References</u>

San Francisco (Calif.), Department of Public Health, & San Francisco Municipal Transportation Agency. (2013). Identifying high pedestrian injury corridors for targeted safety improvements: a methodology for San Francisco, California : 2013 update. Retrieved from

http://www.sfhealthequity.org/component/jdownloads/finish/8-transportation/280-identifying-high-pedestrian-injury-corridors-for-targeted-safety-improvements/0?Itemid=62
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Metro. (n.d.). Retrieved March 14, 2018, from https://www.oregonmetro.gov/

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