

TRANSPORTATION SYSTEM

TRANSPORTATION SAFETY AND SECURITY

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS



APPENDIX 1 OF 2
SAN BERNARDINO
INSTRUCTIONS

AS ADOPTED ON MAY 7, 2020

PART ONE	2
PART TWO	4
PART THREE	5
PART FOUR	7
PART FIVE	8
PART SIX	8
PART SEVEN	8



TECHNICAL REPORT

TRANSPORTATION SAFETY AND SECURITY APPENDIX 1 OF 2
AS ADOPTED ON MAY 7, 2020

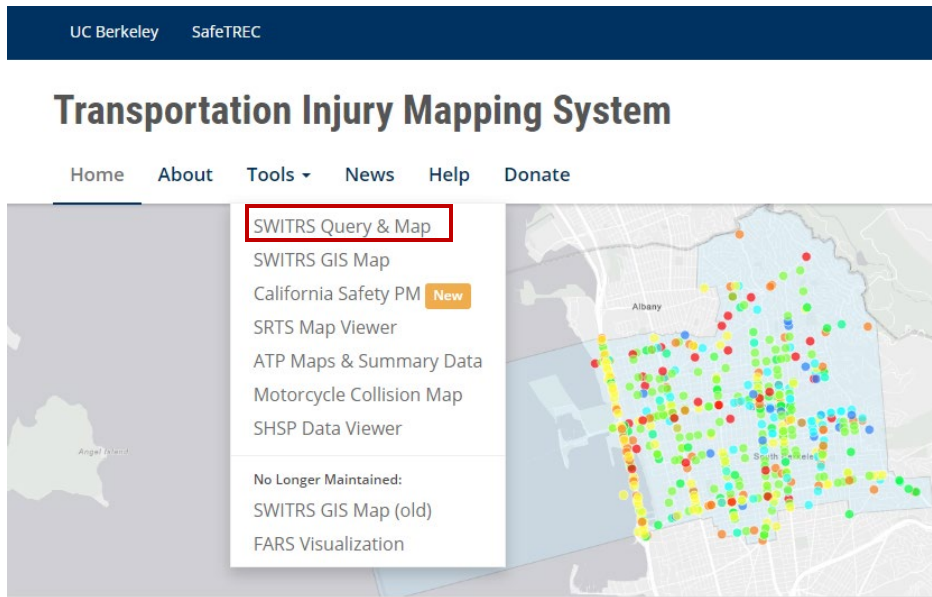
APPENDIX 1 OF 2

San Bernardino Instructions

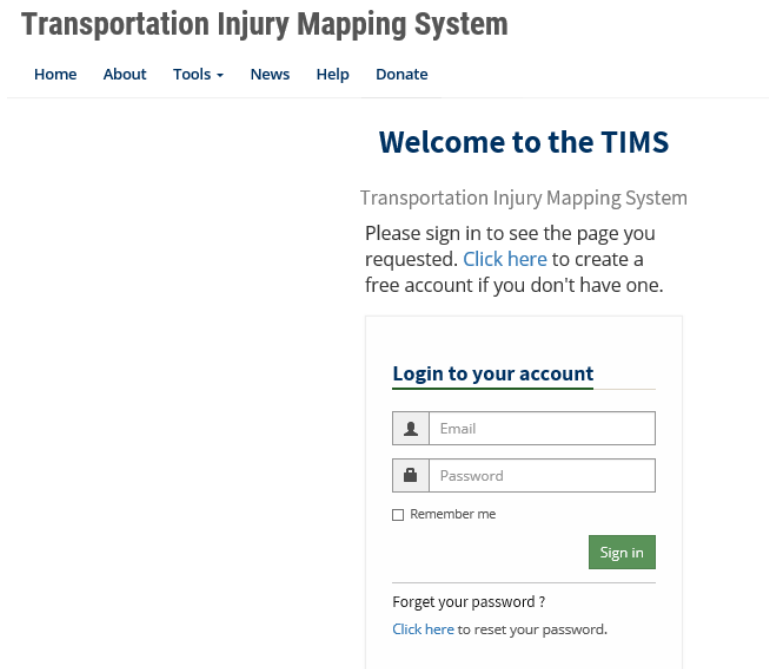
The following instructions were created using ArcMap 10.5.1.

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.



SAN BERNARDINO INSTRUCTIONS

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

SWITRS Query & Map

The SWITRS Query & Map application is a tool for accessing and mapping collision data from the California Statewide Integrated Traffic Records System (SWITRS).

1. Please specify date and location

The screenshot shows the 'Date' field with '01/01/2010' and '12/31/2014' entered. The 'County' dropdown is set to 'San Bernardino'. The 'City' dropdown is set to 'All'. A note indicates that data from 2006 to 2018 is available, with 2016-2018 being provisional.

2. (OPTIONAL) Narrow down your results by adding specific factors to the query.

Selected Factors

Collision Severity **State Highway**

- 1 - Fatal No
- 2 - Injury (Severe)

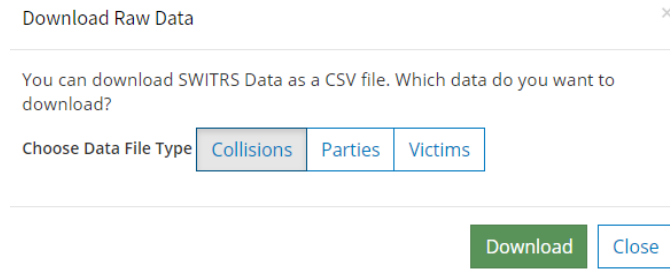
Collision factors - 2 factors selected

The screenshot shows a grid of collision factors. 'Collision Severity' and 'State Highway' are selected. A 'Collision Severity' dialog box is open, showing '1 - Fatal' and '2 - Injury (Severe)' selected. A 'State Highway' dialog box is also open, showing 'No' selected.

Party factors - All factors selected

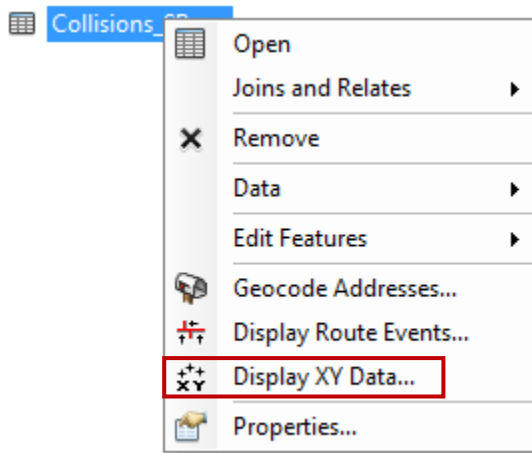
Victim factors - All factors selected

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

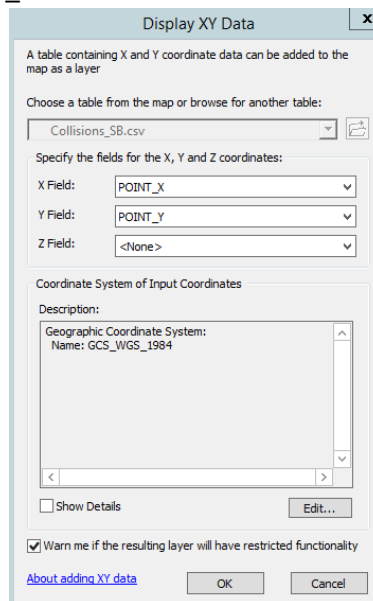


PART TWO: UPLOADING DATA

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

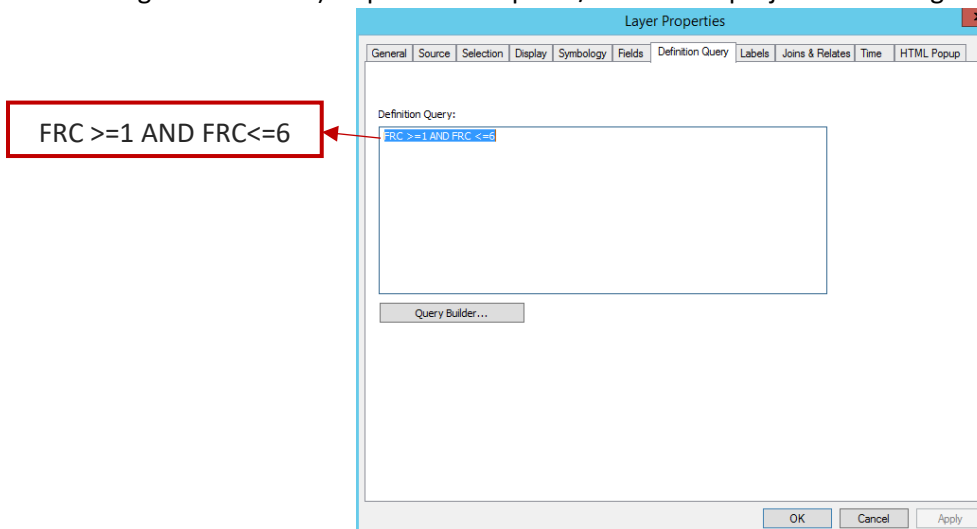
SOURCE: SCAG TomTom street network

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

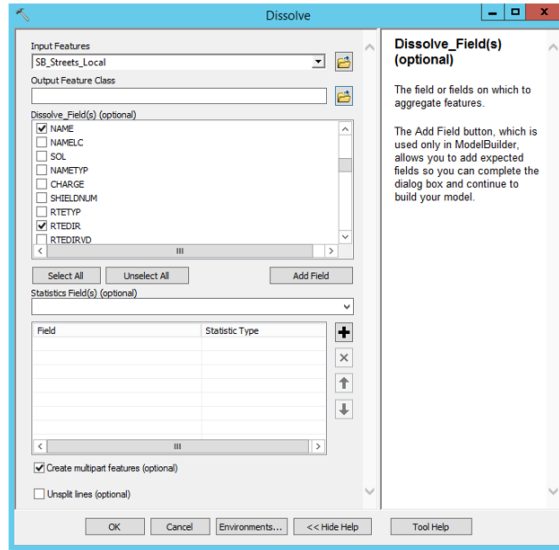
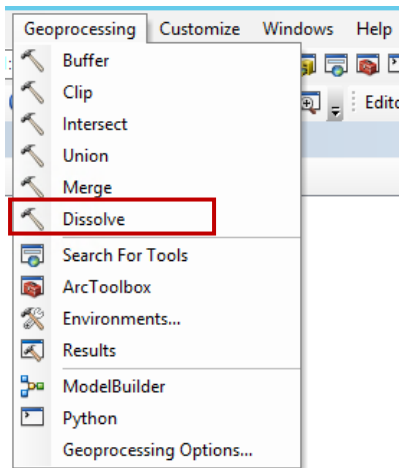
FRC

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

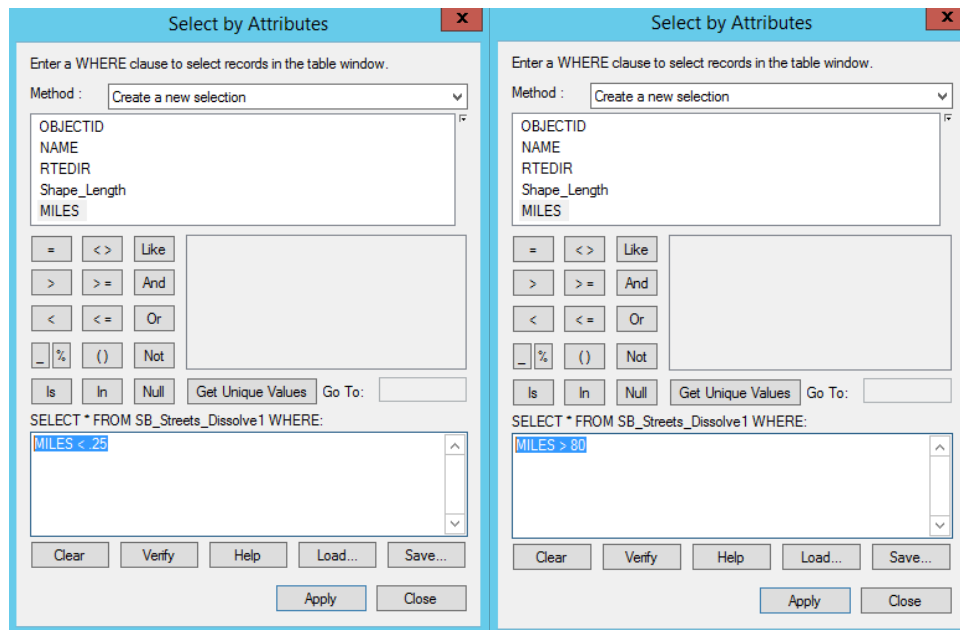
1. Open Layer Properties to execute a **definition query** which will select local roads (i.e.: FRC that ranges from 1 to 6). Export the shapefile/data to the project folder or geodatabase.



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'
```


SAN BERNARDINO INSTRUCTIONS

```
>>> 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.

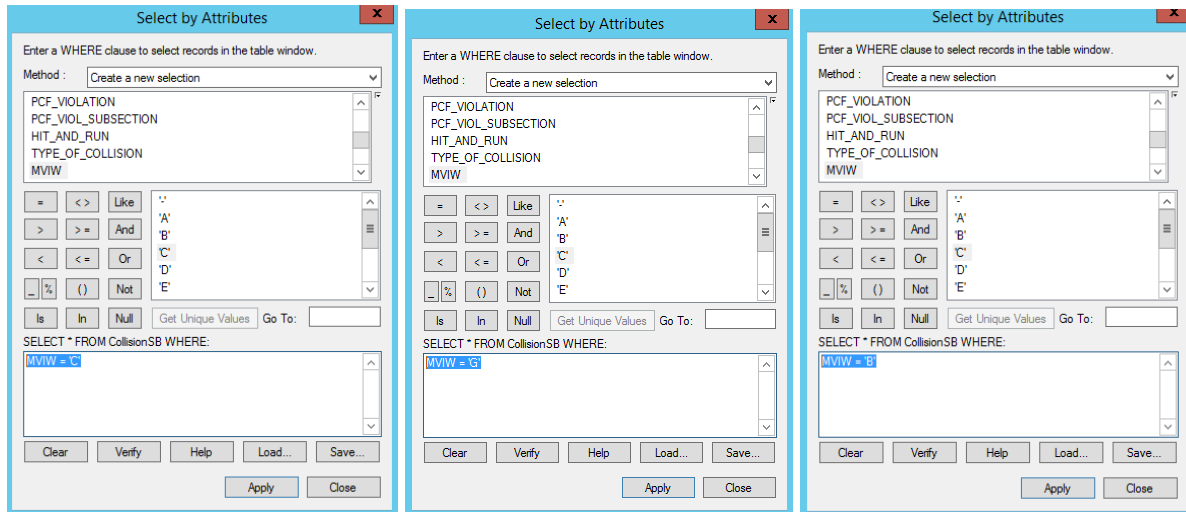
MVIW

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

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]

SAN BERNARDINO INSTRUCTIONS



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

References

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

SAN BERNARDINO INSTRUCTIONS

<http://www.sfhealthequity.org/component/jdownloads/finish/8-transportation/280-identifying-high-pedestrian-injury-corridors-for-targeted-safety-improvements/0?Itemid=62>

Vision Zero High Injury Network Prioritization. (2016, June 17). Retrieved March 14, 2018, from

<http://visionzero.lacity.org/vision-zero-high-injury-network-prioritization/>

Metro. (n.d.). Retrieved March 14, 2018, from <https://www.oregonmetro.gov/>



MAIN OFFICE

900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017
Tel: (213) 236-1800

REGIONAL OFFICES

IMPERIAL COUNTY

1405 North Imperial Ave., Ste. 104
El Centro, CA 92243
Tel: (213) 236-1967

ORANGE COUNTY

OCTA Building
600 South Main St., Ste. 741
Orange, CA 92868
Tel: (213) 236-1997

RIVERSIDE COUNTY

3403 10th St., Ste. 805
Riverside, CA 92501
Tel: (951) 784-1513

SAN BERNARDINO COUNTY

1170 West 3rd St., Ste. 140
San Bernardino, CA 92410
Tel: (213) 236-1925

VENTURA COUNTY

4001 Mission Oaks Blvd., Ste. L
Camarillo, CA 93012
Tel: (213) 236-1960



TECHNICAL REPORT

TRANSPORTATION SAFETY AND SECURITY APPENDIX 1 OF 2
AS ADOPTED ON MAY 7, 2020

connectsocial.org